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ABSTRACT

Museum visits allow students to see animals from South America, North America, Africa, Asia, and the North Pole without rain, snow, or mosquitoes. This activity guide was developed for teachers, chaperones, and students to use with the animal exhibits in the Daniel F. and Ada L. Rice Wing of the Field Museum of Chicago. Activities are designed for students to work independently and cooperatively without teacher intervention. These structured activities are intended to help students learn, appreciate exhibits more fully, and help focus their attention and thoughts as if on a guided tour of the museum. Ten separate activities, each containing a list of skills, background information, directions for pre- and postmuseum activities, and extensions are included. Two additional topics cover frequently asked questions about The Field Museum, and thoughts from the museum's scientist for the teacher are also included. A teacher and student map of the first floor of the field museum is presented to guide visitors through the exhibits. Additional information with referencing museum numbers is featured for the instructor. (SJR)

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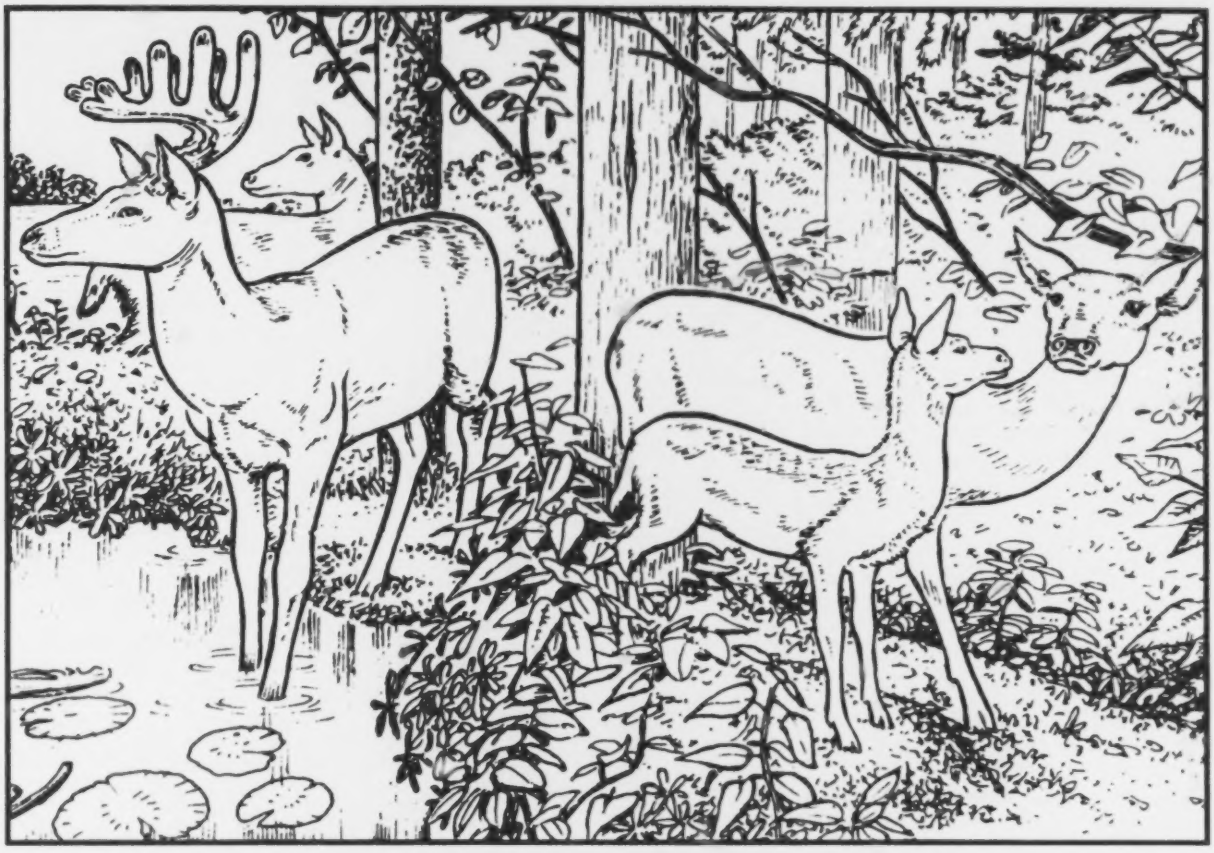

THE ANIMAL EXHIBITS
AT THE FIELD MUSEUM

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ACTIVITIES FOR FOCUSED FIELD TRIPS

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These materials were developed for teachers, chaperones, and students to use in the animal exhibits in the Daniel F. and Ada L. Rice Wing of the Field Museum. We wish to recognize those who contributed to this activity packet:

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Introduction

Welcome to the Field Museum. Have a great field trip!

Guess Where We Went!

Tell your students that you are taking them not on one field trip but many. Predict they will visit natural areas in South America, North America, Africa, Asia, the North Pole—every corner of the world. Guarantee no rain, no snow, *no mosquitoes*. Pledge it will not be too hot or too cold. Promise them they will find animals and observe them without frightening them away.

Assuming you do not have bus at your beck and call, and an airplane, and a pontoon boat, and a professional naturalist, and a time machine, the only way to do all this is at the Museum.

Museums do not replace experience in the natural areas—but they spark the imagination of students, they help prepare students for a life of exploration, and they motivate students to seek out these experiences.

A Successful Visit

We all want students to learn and have fun. Visiting museums is a fun way to learn. Research shows what makes visits successful. Clearly, preparation before visiting, an understanding of appropriate behavior, willing chaperones, and (possibly) lunch are all important. Beyond those basics, research shows that visits should have a structured component and an open component.

Structured components include tours lead by museum staff, special classes at the museum, and activities such as the ones on the following pages. Open components include encouraging a group (always accompanied by the chaperone) to explore some particular interest in more detail or to take a brief look at several exhibits. Depending on the ages of students and other factors teachers decide how much of each type of component to include.

Structured components help students learn, help them appreciate exhibits more deeply, and help students focus their thoughts and attention. They give a field trip purpose and signal students that it is not just a free (or free-for-all) day but an opportunity to learn from real things. An open component is important too. It helps students sample the museum, allows them to direct their learning in some way, and lets them imagine what they might do if they came on their own. It helps develop the skills necessary for lifelong learning.

Using These Activities

These activities will help student have a richer field trip. They are student and chaperone friendly. They are designed to work without constant teacher intervention. With basic, short preparation before hand, students will succeed. Some activities are geared to individual effort. Most activities can be done by students working in pairs or small groups—this reduces copying, saves paper, and encourages students to work cooperatively and to reason together.

Activities are structured to help focus students' attention. All but two activities are for use in the exhibits during a field trip. The two exceptions, *The Four Seasons Flexagon* and *Make It Live*, are for use before or after a visit.

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A Word for Chaperones

Thanks!

Chaperones make all the difference in a field trip. As you accompany students on your field trip remember that you have had many more experiences than they. Help them slow down and observe carefully. Encourage them to help you look at the exhibits with fresh eyes.

Challenge them to find details in the exhibit. Look for one or two items in a case and ask your students to find them. *Can you see the blue butterfly? the green frog?* As they look closely they will discover the richness of the dioramas. Even if they do not find the blue butterfly or the green frog, they will find other things. Make this process of discovery fun! Encourage them to ask each other to find things.

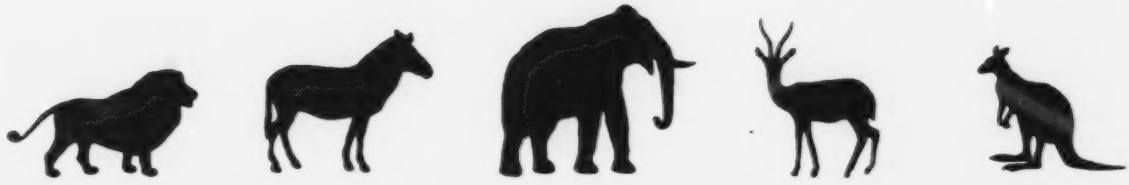
Go beyond just finding. If students find the green frog easily, ask them why it was easy to find. If it was difficult to find, encourage them to figure out why it was difficult.

Ask students why things are they way they are. Why is the branch broken? Why is the grizzly bear brown? Reinforce the process of reasoning—not just getting the right answers.

Questions without right answers are great! They let us teach and stimulate without needing to be a certified expert in every field.

Quickly scan labels. They tell you interesting things you can share with your students.

Best of Luck



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The Animal Kingdom

Overview of the Exhibits

Over the last several years, major portions of The Field Museum's exhibits focusing on mammals and birds have been dramatically redone, retaining classic animal dioramas and adding a variety of interactive and hands-on elements. The exhibits are now alive with sound—bird calls, animal roars, insect sounds. Students will find computers in many areas to provide more in-depth information. Games add an element of play. In many places, the visitors feel they are *in* the diorama. The Rice Wildlife Research Station allows visitors to go far beyond an average visit. Behind the scenes (in the two floors above the public ones) the Museum remains a major research institution. The Museum continues to push the edge of knowledge about the natural world and to communicate this knowledge to society. Enjoy the exhibits that explore the Animal Kingdom.

Nature Walk

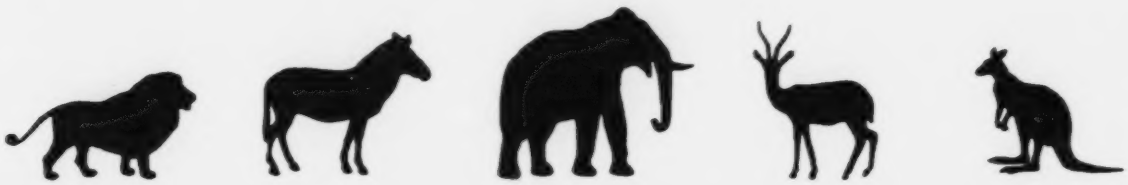
Hike *Nature Walk* with your students. Walk over boardwalks, earthen paths, and mountain terrain. Discover six habitat areas: wetlands, cliffs, ocean shores, prairie, woodlands, and local lakes. Each is rich with animal dioramas, sounds, and interactive elements that encourage active exploration of nature's wonders. Challenge students to search under logs for animals (Museum # **22**, **23**, **32**, and **39**), find the caiman (a South American crocodile, Museum # **1**), investigate an oil spill (Museum # **5**), observe animals through "telescopes" (Museum # **7** and **10**), search for the insects in the dioramas that seem to focus on larger animals, play the Deer Management Game (Museum # **26**), observe the changing seasons (Museum # **29**, **30**, **32**, and **33**), and peer through an ice hole to find a huge salamander (Museum # **42**).

North American Birds

Explore *North American Birds.* You do not need a field guide: the exhibit *is* a field guide. Here you will find over 95% of the species of birds in the United States. Encourage students to listen to ducks that do not quack (Museum # **53**), feel the sharp claw (carefully!) of an eagle (Museum # **60**), examine the eggs of an robin (Museum # **62**), discover two species of birds that speak their own names (Museum # **64**), find the North American birds that certainly *look* like penguins (Museum # **69**), and *watch* the sound of a wren (Museum # **71**).

Birds of the World

Notice that the birds in *Birds of the World* are arranged by group. You can compare how they are alike and different. Suggest students check why chickens have both white meat and dark meat (Museum # **77**), feel the sharp beak of an eagle (Museum # **81**), look *up* at an ostrich (Museum # **82**), find the killdeer chicks in their rocky "nest" (Museum # **85**), and compare the beaks of birds with common tools that perform similar tasks (Museum # **91**).



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W. K. Kellogg Foundation World of Mammals

Carnivorans

Carnivorans all descended from a common ancestor that ate meat—but not all modern carnivorans eat meat. Match the carnivorans to the food they eat (Museum # **99**). Biologists divide carnivorans into two groups: those related to dogs and those related to cats. Slide the interactive panels and see how well you do dividing them (Museum # **93**). Carnivorans include foxes, wolves, raccoons, bears, seals, otters, hyenas, large cats, and more. Play the Panda Bear Game to find out if pandas are more closely related to true bears or to raccoons (Museum # **97**).

Early Mammals

Students are fascinated by these unusual animals. The animals found in *Early Mammals* descended from the first groups of mammals to evolve. Some lay eggs. Some shelter their new born in protective pouches. All nurse from their mothers, as do all mammals. This section includes armadillos, sloths, anteaters, wombats, Tasmanian devils, kangaroos, opossums, and platypuses. Ask students which one they think is most unusual and why.

Rabbits and Rodents

Rabbits and rodents are more closely related to each other than to other groups of mammals. The small size of this section contrasts with the large number of different species it contains. Ask students to find a guinea pig, a chinchilla, a rat, a squirrel, a porcupine, a chipmunk, a prairie dog, a jackrabbit, a hare, and a pika. They may find more than one species of each. Remind students to check the trash can (Museum # **119**). Suggest students look through the powerful magnifying glass at the teeth of some of these animals (Museum # **113**).

Hoofed and Marine Mammals

All the animals in this section—deer, wart hogs, pigs, elephants, zebras, whales—descended from hoofed ancestors. Stand next to the elephant skeleton and ask students to find the largest skeleton (except dinosaurs) in the Museum (whale, hanging high above the elephant, Museum # **144**). Then pause and ask them to find the elephant skeleton (Museum # **120**) too. Listen to the song of a whale (Museum # **146**).

Primate, Bats, and Shrews

Tell students to look at our closest relatives. Examine the "hand" (the wing) of the bat (Museum # **132**). Peek at the most unusual primate (Museum # **135**). Ask students to pick their favorite primate and explain why.

Messages from the Wilderness

Take your students to the national parks of North and South America and let them learn the messages that these natural areas have for protecting the earth. *Messages from the Wilderness* is full of hands-on experience for students. Ask students to determine what happens when they push the unmarked button on one diorama (Museum # **151**), discover how much space each person will have in the year 2600 if current population growth continues (Museum # **153**), use a computer to learn more about all the animals in this hall (Museum # **153**), determine the length of an anteater's tongue (Museum # **156**), find the bird in the diorama with the tapirs (Museum # **161**), feel the damp chill of the frozen tundra (Museum # **168**), and hear a ranger tell about the drama occurring in the polar bear diorama (Museum # **173**).

Asian Mammals

Step back in time into the *Asian Mammals Hall.* Compare this traditional exhibit with those that have undergone major renovation. In both styles of exhibits the dioramas retain their original beauty. Ask students for their opinions on the contrast in styles of exhibits. Dioramas include Bengal tigers, pandas, Indian rhinoceroses, leopards, gibbons, orangutans, sloth bears, and more.

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Daniel F. and Ada L.Rice Wildlife Section

Plaza of the Rice Wildlife Research Station

Stop with your students at the beautiful Rice Plaza (Museum # **214**). Look at the dramatic mural of the Serengeti in Kenya and Tanzania (Museum # **215**). Many teachers find that it is a terrific backdrop for a class photo. Artist Carol Christianson worked on this wall-sized mural for fifteen months, for fourteen hours each night. Table, chairs, benches, and stools make this a good spot for a break. Take this opportunity to review what your group has learned and what your students will do next. You may wish to challenge your students to observe closely the African animals on display here using the African Animals Observation activities.

Rice Wildlife Research Station

Explore the Rice Wildlife Research Station (Museum # **213**) with your students. This multimedia center looks like what an actual research station might look like in the vast savanna ecosystem of eastern Africa. It allows you and your students to move beyond the limits of the exhibits and explore particular topics in depth. To assist your exploration you will find books, newspapers, magazines, encyclopedias, research journals, games, activity boxes, microscope slides, videos, laser disks, X-rays, maps, and more. Knowledgeable volunteers staff this area to help you.

Activity Boxes These activity boxes will interest students from pre-school through middle school. They work well for chaperone-size groups. Topics include *Animal Homes, Pond Puppets,* and *Wild in Chicago: Urban Animals.* They provide hands-on experiences by supplying puppets to try, games to play, skulls of small mammals to observe, animal pelts to touch, and more. Allow 10 to 30 minutes.

Interactive Computer Programs Dozens of educational, interactive computer programs encourage active learners to delve into biology more deeply. Some of these include *The Tsavo Lion Story, Trek of the Mammoths,* and *Animal Watch: Whales.* Currently three computers are available. Often two or three students work together cooperatively at each computer. Allow 10 to 30 minutes.

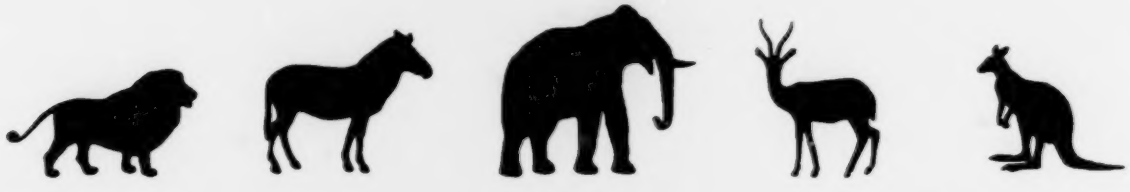
Research Projects Consider asking more advanced students to research a topic using the Rice Wildlife Research Center facilities. Particularly rich resources are available on tropical rainforests and mammals of the world. Allow 30 to 60 minutes.

Resource Search On-line computer access provides listings of the references in this room and the Webber Resource Center. Using a computer terminal volunteer staff can search other sources nationwide through Internet connections. Allow 10 minutes per topic searched.

Bulletin Board Read this bulletin board and catch up on the latest environmental news. Clippings are current and deal with important ecological issues. Allow 5 minutes.

African Mammals

Like *Asian Mammals, African Mammals* has not had major changes. Students will find zebras, wildebeests (gnus), rhinoceroses, baboons, and giraffes. Tell students not to miss the Africa Water Hole (Museum # **236**), probably the most magnificent diorama in the Museum. Challenge students to count the number of different species in this huge diorama.



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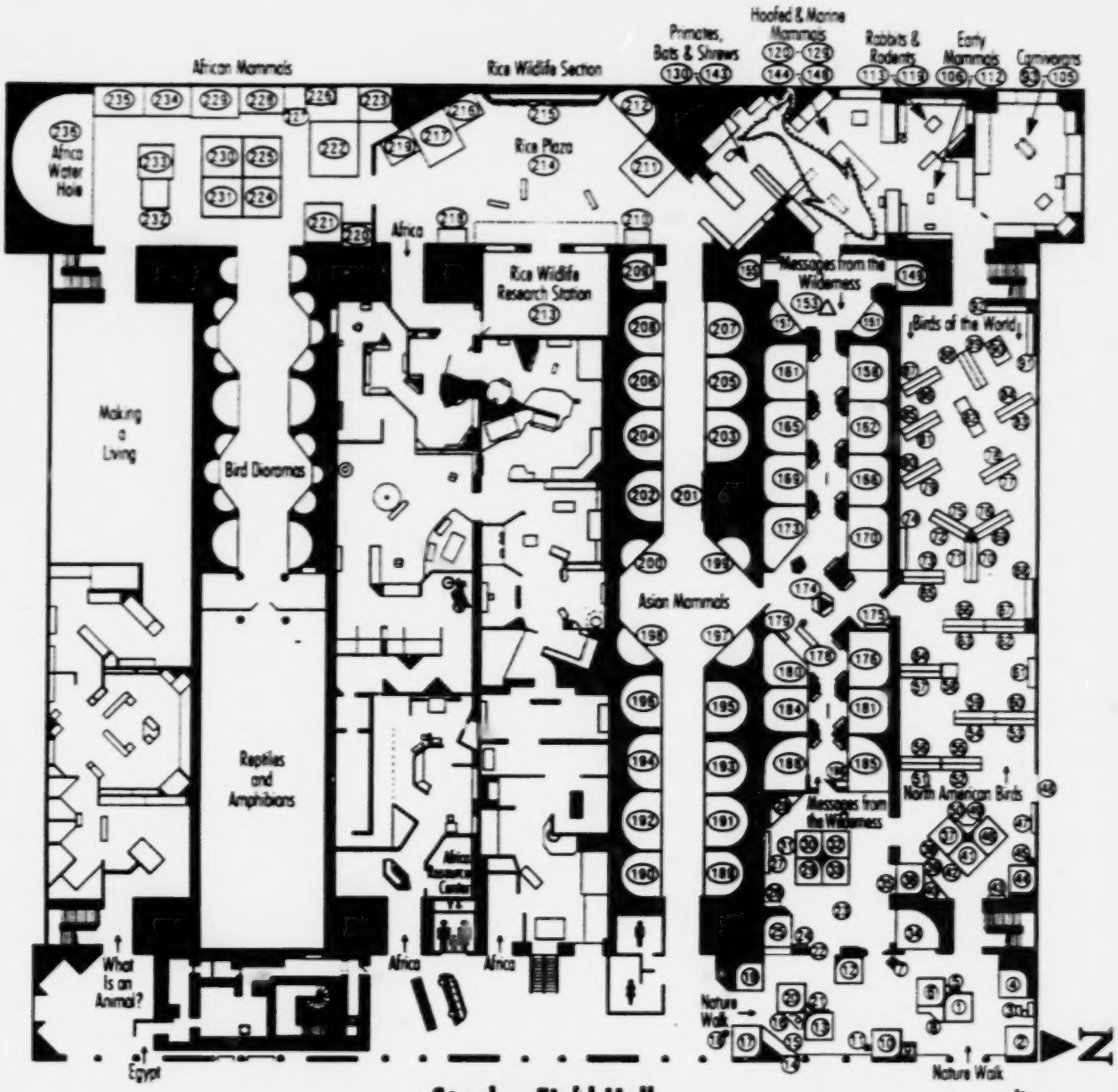
Teacher Map

Daniel F. and Ada L. Rice Wing



Stanley Field Hall

Note to Teachers and Chaperones This map shows the west wing of the first floor of The Field Museum. Sections about animals (other than humans) include *Nature Walk, North American Birds, Birds of the World, Messages from the Wilderness, Asian Mammals, Rice Wildlife Research Station, Rice Plaza,* and *African Animals.* To help you and your students find particular items, each case or interactive device has a number (usually in the upper left corner). Sometimes it is not possible to place a number on an object, or a number may be missing. However, because items are numbered in order, students will be able to find most items easily.

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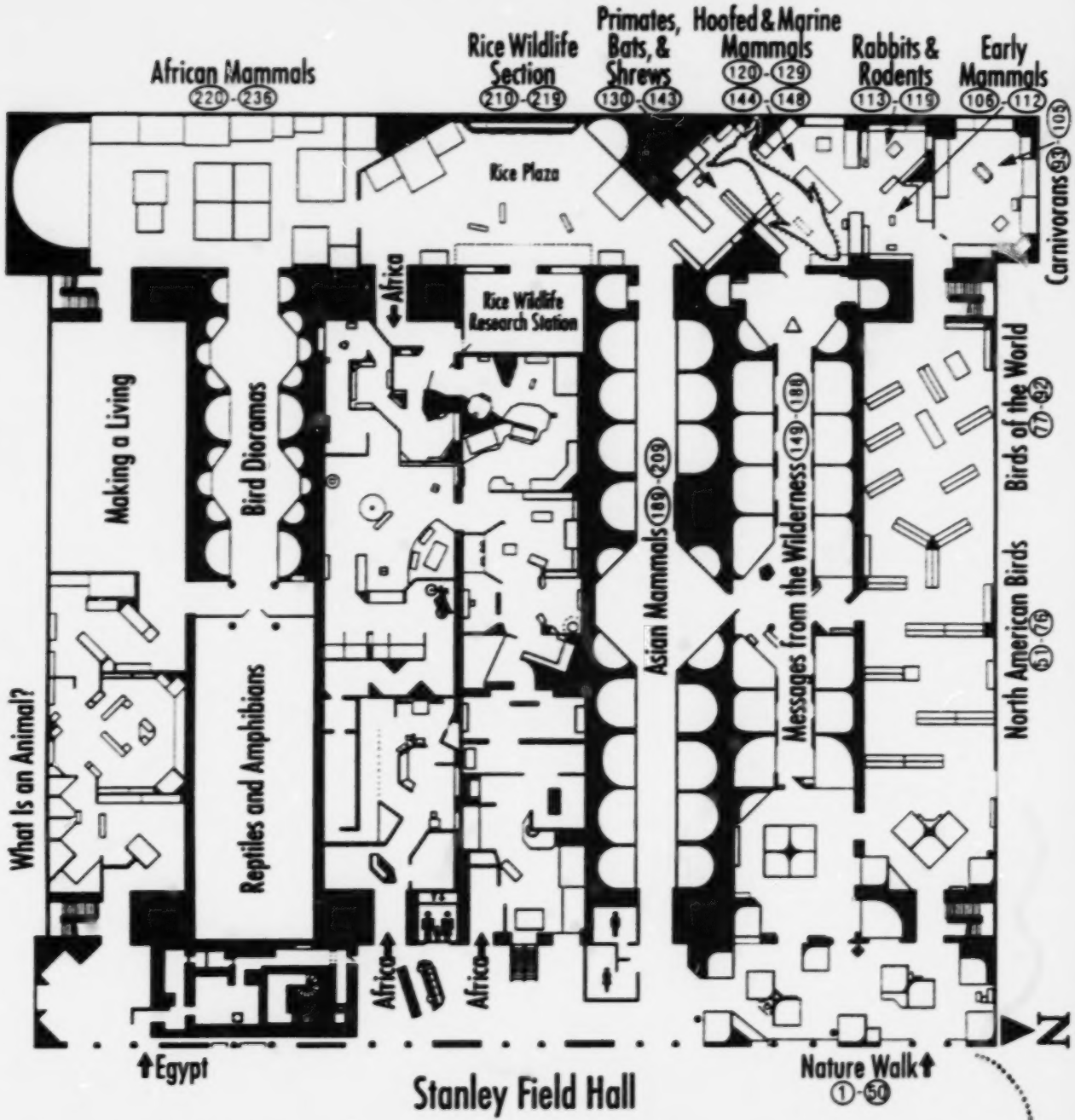
Student Map

Daniel F. and Ada L. Rice Wing



This map shows the west wing of the first floor of The Field Museum. Sections about birds and mammals are marked. To help you find things, almost everything has a number (usually in the upper left corner).

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Consulting Curator

Skills
- Evaluating
- Observing
- Thinking critically

In Brief
Students critically examine a museum exhibit.

Goal
To develop the science skills of observing and evaluating.

Background
Many individuals work together to create exhibits. They consider many things including topic, scientific content, museum expertise, cost and funding, deadlines, target audiences, ways to engage visitors, and sensitivities of all people.

Directions
Note: This activity works well in most exhibit halls.
Distribute *Consulting Curator* activity sheets. Ask students to critically examine an exhibit, identify the significant parts, and determine the changes they would make.

Follow Up (optional)
1. Encourage students to share their reactions and compare their responses. Discuss these questions.
   - **a.** Does this exhibit treat the subject objectively or emotionally? Why? What consideration may have gone into this decision?
   - **b.** How well does this exhibit appeal to students of varying ages? What specific changes could make it better for a particular age? Would these changes make it less suitable for other age students?
   - **c.** How well does this exhibit appeal to those who do not know how to read or who read poorly? How could the Museum better meet their needs in this exhibit?
   - **d.** How well does this exhibit appeal to non-English speakers? How could their needs be better met?
   - **e.** How does this exhibit meet the special needs of disabled individuals? How does it fail? Consider a variety of disabilities.
   - **f.** What points of view does the exhibit present? Male/female, young/middle-aged/elderly, rich/middle class/poor, white/African American/Asian American/American Indian/etc., well-educated/uneducated, scientifically knowledgeable/scientifically naive, disabled/not disabled, late 20th century/other times, etc.
   - **g.** Why do you think the Museum considered this subject important? What is the exhibit's purpose? Who is the audience?
   - **h.** Where do the animals/objects in the exhibit come from? How were they obtained? For more information see *Are They Real?* and *Dream On: Thoughts from a Museum Scientist.*
2. Challenge students to design a classroom exhibit using the principles they have learned.

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CONSULTING CURATOR

IF I WERE PLANNING THE EXHIBIT . . .

I'D LEAVE OUT THE PART ABOUT _____.

I'D ADD A PART ABOUT _____.

I'D EXPAND THE PART ABOUT _____.

I'D EXPLAIN MORE ABOUT _____.

I'D CHANGE THE PART ABOUT _____.

HOW? _____.

THE MOST FUN PART WAS _____.

THE DULLEST PART WAS _____.

THE FUNNIEST PART WAS _____.

THE SADDEST PART WAS _____.

I WOULD TELL MY BEST FRIEND ABOUT _____.

I WOULD TELL MY MOM OR DAD ABOUT _____.

MY FAVORITE PART WAS _____.

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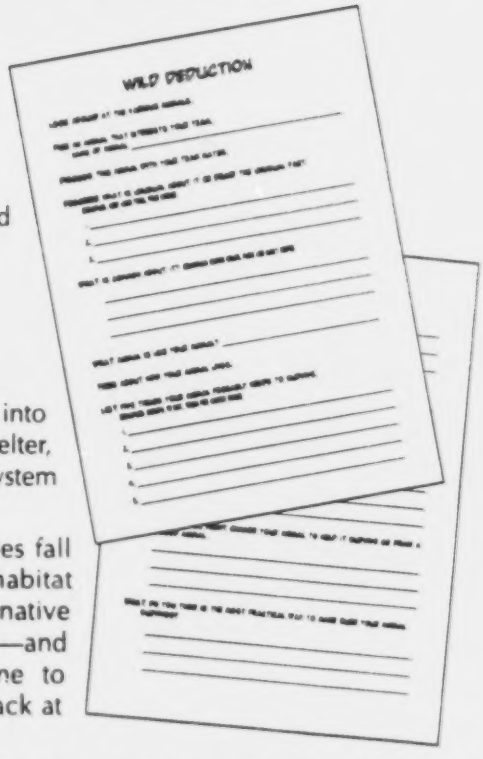
Wild Deduction

Skills

- Comparing and Contrasting
- Observing
- Inferring



In Brief

Students develop observational skills by focusing on and describing a single animal of their choosing.

Goal

To develop observational skills.

Background

Most of the requirements animals need to survive fall into certain common categories such as food, air, water, shelter, habitat, mates for reproduction, etc. Altering the ecosystem threatens an animal's ability to meet these needs.

Because of these common needs, most threats to species fall into a few basic categories—habitat destruction, habitat alteration including pollution and introduction of non-native animals and plants, hunting, and natural catastrophe—and have generally similar solutions. Students, given time to observe animals closely and led in guided discussion back at school, will deduce these.

Observational skills develop with practice. Focusing on observing a single animal may improve these skills more than attempting to observe many animals. By examining a single animal, students learn to see it as a vital part of an ecosystem.

Directions

Note: You may wish to explain activity at school or on the bus on the way to the Museum.

1. Divide students into teams of three. Suggest that two team members gather the needed information and the other member record and evaluate it. Distribute *Wild Deduction* activity sheets.
2. Select a section of the animal halls for this activity.
   The activity works best when all the needed animal cases are visible at the same time.

   A whole class can work comfortably in *Carnivorans, Asian Mammals, African Mammals,* and several parts of the *North American Birds* and *World of Birds.*

   For chaperone-sized groups *Rodents and Rabbits* works well, as does any part of *North American Birds* or *World of Birds.* Other areas that work well for chaperone-sized groups but have higher visitor traffic include *Early Mammals* and *Primates, Bats, and Shrews.*
3. Tell students to pick an animal and record their observations on their *Wild Deduction* activity sheets. Explain that many questions have no "right" answer. Encourage them to make reasonable guesses.

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WILD DEDUCTION

LOOK AROUND AT THE VARIOUS ANIMALS.

PICK AN ANIMAL THAT INTERESTS YOUR TEAM.
NAME OF ANIMAL _____

DISCUSS THIS ANIMAL WITH YOUR TEAM MATES.

DESCRIBE WHAT IS UNUSUAL ABOUT IT OR **DRAW** THE UNUSUAL PART.
(EXAMPLES: VERY LONG TOES, FOUR HORNS)

1. _____
2. _____
3. _____

WHAT IS COMMON ABOUT IT? (EXAMPLES: BROWN COLOR, FLIES LIKE MOST BIRDS)

_____

_____

_____

WHAT ANIMAL IS LIKE YOUR ANIMAL? _____

THINK ABOUT HOW YOUR ANIMAL LIVES.

LIST FIVE THINGS YOUR ANIMAL PROBABLY NEEDS TO SURVIVE.
(EXAMPLES: INSECTS TO EAT, TREES FOR MAKING DAMS)

1. _____
2. _____
3. _____
4. _____
5. _____

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WHAT MIGHT CAUSE YOUR ANIMAL TO BECOME EXTINCT?

1. _____

2. _____

3. _____

GIVE A POSSIBLE SOLUTION FOR EACH THREAT. BE CREATIVE.

1. _____

2. _____

3. _____

GUESS WHAT MIGHT HAPPEN TO OTHER ANIMALS IF YOUR ANIMAL BECAME EXTINCT. **WHAT** MIGHT HAPPEN TO THE ANIMALS THAT DEPEND ON THESE OTHER ANIMALS?

_____

_____

_____

DESCRIBE HOW YOU MIGHT CHANGE YOUR ANIMAL TO HELP IT SURVIVE OR **DRAW** A CHANGED ANIMAL.

_____

_____

_____

WHAT DO YOU THINK IS THE MOST PRACTICAL WAY TO MAKE SURE YOUR ANIMAL SURVIVES?

_____

_____

_____

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WILD DEDUCTION

LOOK AROUND AT THE VARIOUS ANIMALS.

PICK AN ANIMAL THAT INTERESTS YOUR TEAM.

NAME OF ANIMAL Answers will vary. Favorites include large or unusual mammals or birds.

DISCUSS THIS ANIMAL WITH YOUR TEAM MATES.

DESCRIBE WHAT IS UNUSUAL ABOUT IT OR **DRAW** THE UNUSUAL PART.
(EXAMPLES: VERY LONG TOES, FOUR HORNS)

1. Answers will vary. Some possibilities are: very small, large eyes, orange color, large egg, four horns, long toes, small ears, pink buttocks,
2. pointed quills, downy feathers, front pouch, high pitched song, large rear legs but small front ones, etc.
3. _____

WHAT IS COMMON ABOUT IT. (EXAMPLES: BROWN COLOR, FLIES LIKE MOST BIRDS)

Students may find this a little difficult. It is sometimes hard to notice the ordinary—but it is an important observational skill that scientists value.

Answers will vary. Possibilities include: four legs, two eyes, two wings, brown color, flies like most birds, two horns, eats food, breathes, runs, etc.

WHAT ANIMAL IS LIKE YOUR ANIMAL? Answers will vary.

THINK ABOUT HOW YOUR ANIMAL LIVES.

LIST FIVE THINGS YOUR ANIMAL PROBABLY NEEDS TO SURVIVE.
(EXAMPLES: INSECTS TO EAT, TREES FOR MAKING DAMS)

1. Answers will vary. All animals need certain basic requirements. Some possibilities (within these grouped by basic requirements) are:
   Food: mice, insects, nuts, worms, fish, roots, trees with bark
2. **Air:** to breathe
   Water: to drink, to swim in, to reproduce in, flowing water to dam
3. **Habitat:** open plains, woodlands, wetlands, rocky cliffs, islands without predators
   Shelter: grasses for making nest, high tree for nest, trees with bark for dams, shallow caves, abandoned nests, soil good for burrowing
4. **Mate(s):** for reproduction
5. _____

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WHAT MIGHT CAUSE YOUR ANIMAL TO BECOME EXTINCT?

Many answers are possible because a great number of conditions threaten species. Most answers fall into a few categories:

1. **Habitat Destruction:** wetlands drained for farms or houses, forests completely cut for timber, prairies converted to farmlands.
   Habitat Alteration: habitats changed in ways that original animals cannot survive (prairies or forests protected from fire).
2. Also pollution of the habitat (lead shot from hunting can enter food supply and harm animals, DDT can cause weak shells to be produced).
3. Also introduction of non-native animals or plants may kill off entire species. Introduced predators may eat every animal or plant of a species (pigs or goats brought to an island formerly without predators). Introduced animals may out-compete species for limited resources.
   Hunting: Mexican grizzly bears were hunted to extinction—see Museum #176.
   Natural Catastrophe: Some scientists argue that many dinosaur species became extinct as the result of a giant meteorite hitting Earth.

GIVE A POSSIBLE SOLUTION FOR EACH THREAT. BE CREATIVE.

1. Answers will vary greatly depending upon earlier responses. Most will have to do with stopping a harmful activity (draining wetlands);
2. returning something its natural state (restoring wetlands); or saving animals in a zoo or other artificial manner.
3.

GUESS WHAT MIGHT HAPPEN TO OTHER ANIMALS IF YOUR ANIMAL BECAME EXTINCT. WHAT MIGHT HAPPEN TO THE ANIMALS THAT DEPEND ON THESE OTHER ANIMALS?

Answers will vary. Generally these possibilities exist:

1. Those that ate the extinct animal may be threatened because they may not have enough to eat or they may eat more of another animal which may become threatened.
2. Plants the extinct animal ate may become overgrown and crowd out other plants and change what is available to eat. Plants that needed the extinct animals for propogation, may become extinct.
3. Animals that the extinct animal ate may increase in population and damage the environment threatening themselves and other species.

Important point: the impacts can be broad and unexpected—and irreversible.

DESCRIBE HOW YOU MIGHT CHANGE YOUR ANIMAL TO HELP IT SURVIVE OR DRAW A CHANGED ANIMAL.

Answers will vary.

Generally students will suggest making the animal bigger, stronger, resistant to pollutants, able to eat different types of food, better camouflage, etc.

WHAT DO YOU THINK IS THE MOST PRACTICAL WAY TO MAKE SURE YOUR ANIMAL SURVIVES?

Answers will vary.

Practically speaking, only a handful of the tens of thousands of threatened and endangered species can be saved in zoos or in similar places.

Protecting habitats is the key to saving species.

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The Rest of the Story

Skills

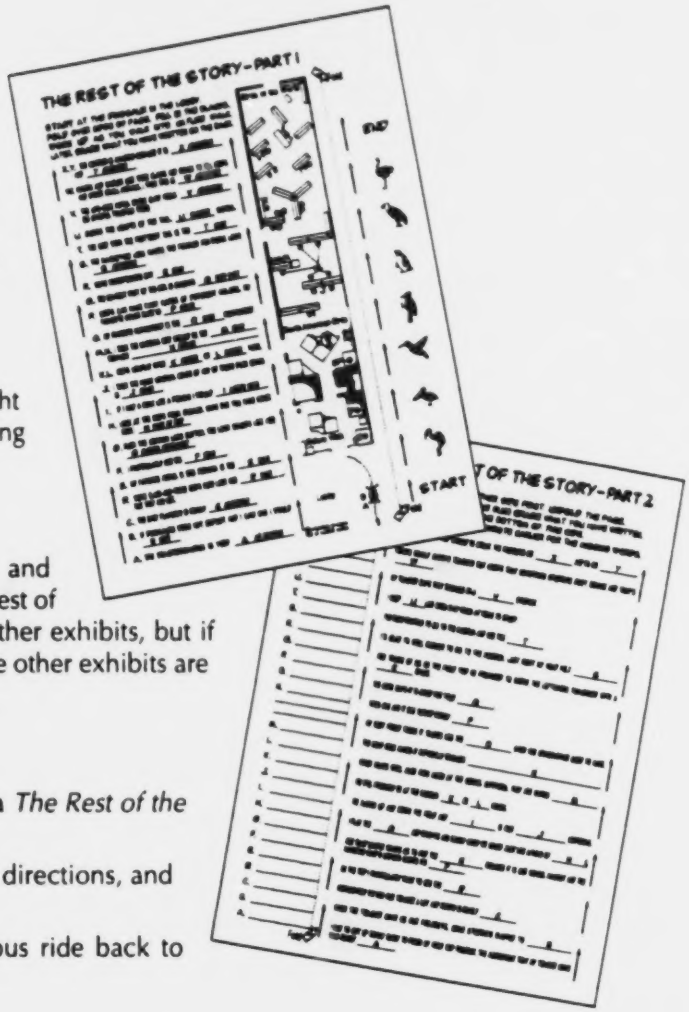
- Inferring
- Observing

In Brief

Students explore a part of the Museum on a directed walk answering questions as they proceed (and later read an unique narrative they have created.)

Goal

Students will appreciate exhibits they might otherwise skip and have *fun* appreciating them.



Background

Dinosaurs and large (seemingly cute and cuddly) mammals easily capture the interest of most people. Students often hurry past other exhibits, but if they stop to look they often discover these other exhibits are (almost) as interesting as the dinosaurs.

Directions

1. Give each student or pair of students a *The Rest of the Story* activity sheet.
2. Tell students to look at Part 1, read the directions, and start at the Brachiosaurus.
3. Suggest students save Part 2 for the bus ride back to school.

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THE REST OF THE STORY–PART I

START AT THE DINOSAUR IN THE LOBBY.
FOLD OVER EDGE OF PAGE. **FILL IN** THE BLANKS.
WORK UP AS YOU WALK INTO *NATURE WALK*.
LATER, **SHARE** WHAT YOU HAVE WRITTEN ON THE BACK.

X.Y. THE OSTRICH IS AMAZING BECAUSE IT IS ___X ADJECTIVE___ AND ___Y ADJECTIVE___.

W. HAWKS AND EAGLES USE THEIR CLAWS AND BEAKS TO KILL BIRDS AND OTHER SMALL ANIMALS. I THINK THIS IS ___W ADJECTIVE___.

V. THE LIFE-SIZE METAL EAGLE CLAW FEELS ___V ADJECTIVE___. (BE CAREFUL TOUCHING THIS!)

U. GUESS THE LENGTH OF THE TAIL. ___U NUMBER___ INCHES.

T. THE BIRD WITH THE PRETTIEST TAIL IS THE ___T NAME___.

S. THE MAGNIFYING LENS MAKES THE PENGUIN FEATHERS LOOK ___S ADJECTIVE___.

R. SOME WOODPECKERS EAT ___R NOUN___.

Q. THE NEATEST PART OF THE OWL IS (ARE) ITS ___Q BODY PART___.

P. BIRDS CAN HAVE MANY MARKS OF DIFFERENT COLORS. MY FAVORITE COLOR MARK IS ___P COLOR___.

O. MY FAVORITE HUMMINGBIRD IS THE ___O NAME___ HUMMINGBIRD.

M.N. I THINK THE NATIONAL BIRD SHOULD BE THE ___M NAME___ BECAUSE ___N PHRASE___.

K.L. BIRDS USUALLY HAVE ___K NUMBER___ OR ___L NUMBER___ TOES.

J. I THINK THE MOST UNUSUAL COLOR OF ANY OF THESE DUCK BEAKS IS ___J COLOR___.

I. IF I HAD A BEAK LIKE A PELICAN I WOULD ___I ACTION VERB___.

H. LOOK AT THE BIRDS FROM CHICAGO. NAME ONE YOU HAVE NEVER SEEN. ___H NAME OF BIRD___

G. PUSH THE COMMON LOON BUTTON. THE LOON SOUNDS LIKE A(N) ___G MUSICAL INSTRUMENT___.

F. I PARTICULARLY LIKE ITS ___F NOUN___.

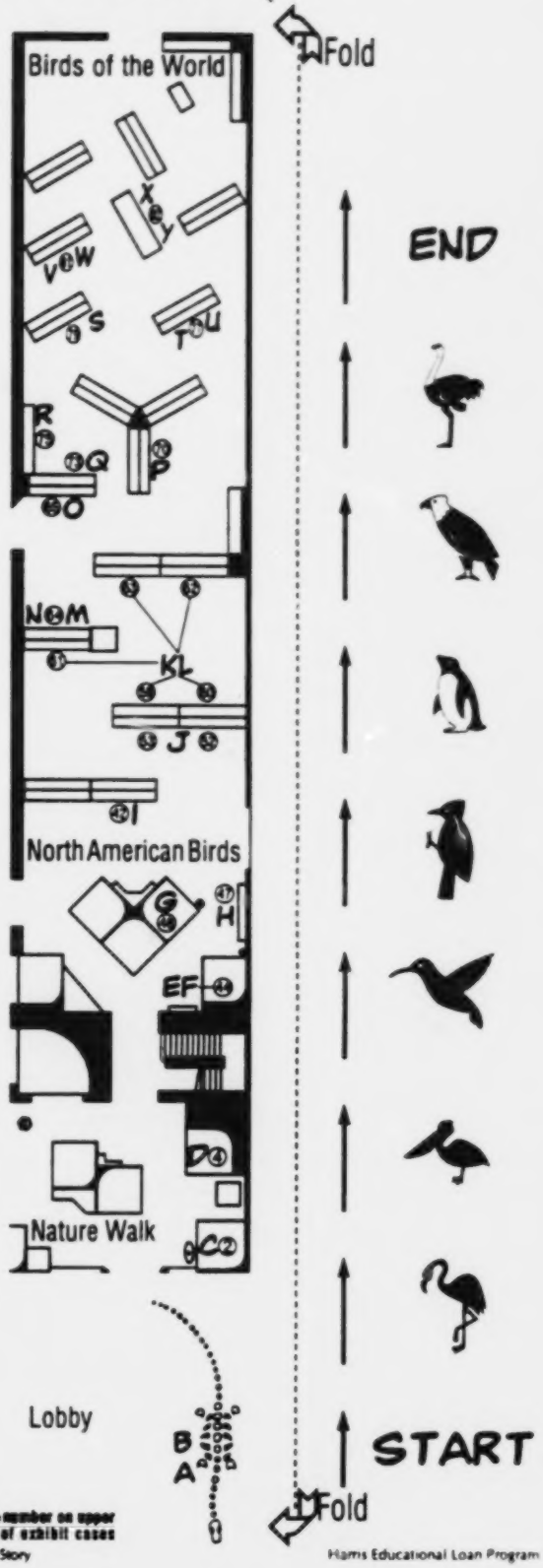
E. MY FAVORITE ANIMAL IN THIS DIORAMA IS THE ___E NAME___.

D. THESE BLACK-AND-WHITE BIRDS SURE LOOK LIKE ___D NAME___, BUT THEY ARE NOT.

C. THE BABY FLAMINGO IS REALLY ___C ADJECTIVE___.

B. IF DINOSAURS WERE NOT EXTINCT AND I SAW ONE I WOULD ___B VERB___.

A. THE BRACHIOSAURUS IS VERY ___A ADJECTIVE___.



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THE REST OF THE STORY–PART 2

COMPLETE THE OTHER SIDE FIRST. **UNFOLD** THE PAGE.
LATER (MAYBE ON THE BUS) **SHARE** WHAT YOU HAVE WRITTEN.
BEGIN READING AT THE BOTTOM OF *THIS* SIDE.
USE THE WORDS YOU WROTE EARLIER FOR THE MISSING WORDS.

Fold

Y. _____
X. _____
W. _____
V. _____
U. _____
T. _____
S. _____
R. _____
Q. _____
P. _____
O. _____
N. _____
_____
_____
M. _____
L. _____
K. _____
J. _____
I. _____
H. _____
G. _____
F. _____
E. _____
D. _____
C. _____
B. _____
A. _____

ANYWAY THE FIELD TRIP SHOULD BE GREAT. THE MUSEUM'S SO ___X___ AND I'M SO ___Y___.

HE/SHE REALLY ENJOYS TEACHING BUT KNOWS THAT SOMETIMES STUDENTS DON'T BEHAVE AND THAT'S ___W___.

MY TEACHER SAYS THAT BECAUSE I'M A ___V___ STUDENT.

I KEEP ___U___ LIVE ONES IN MY ROOM AT HOME TO STUDY.

I'VE BEEN WANTING TO GO TO THE MUSEUM AND SEE THE ___T___.

I'M GLAD I'M WELL ENOUGH TO GO TO THE MUSEUM. LAST NIGHT MY HEAD FELT ___S___.

FOR THOSE OF US ON THE FIELD TRIP HE PROMISED TO SERVE THE LEFTOVERS TOMORROW WITH A ___R___ SAUCE.

THE COOK SAYS IT IS GOOD FOR YOUR ___Q___.

WHEN SHE ATE IT SHE TURNED REALLY ___P___.

MY BEST FRIEND THINKS IT TASTES LIKE THE ___O___ STEW HER GRANDMOTHER USED TO MAKE.

THE HEAD COOK MAKES IT ESPECIALLY BECAUSE ___N___.

WHICH MEANS WE'LL ALSO MISS LUNCH AT THE SCHOOL CAFETERIA. THEY ARE HAVING ___M___.

WE WILL PROBABLY BE AT THE MUSEUM ___K___ OR ___L___ HOURS.

WE MARCH UP AND DOWN THE FIELD AND ___I___ IN OUR ___J___ UNIFORMS.

I PLAY THE ___G___ AND WHEN WE ARE REALLY GOOD WE SOUND JUST LIKE A FLOCK OF ___H___S.

OUR BAND LEADER WANTS US TO FIND THE ___E___ BECAUSE IT IS OUR SCHOOL MASCOT AND THE MARCHING BAND'S UNIFORM SHOWS ITS ___F___

ON THE TRIP I PARTICULARLY WANT TO SEE THE ___D___.

FORTUNATELY WE LIKE OUR TEACHER A LOT AND HE/SHE IS REALLY ___C___.

WHEN THE TEACHER GAVE US OUR PROJECTS, SOME STUDENTS WANTED TO ___B___.

I HAD TO GET UP REALLY EARLY TO FINISH MY FIELD TRIP PROJECT. THE ASSIGNMENT THAT MY TEACHER GAVE WAS REALLY ___A___.

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Help Wanted

Skills

- Comparing
- Drawing conclusions
- Observing

In Brief

Students examine dioramas in *Messages form the Wilderness* and match the animals with job descriptions.

Goal

To appreciate the varied roles animals play in the environment.

Background

A species is molded and shaped by the environment in which it evolves. Every animal must "make a living" and each has it own "role."

Directions

Location: *Messages from the Wilderness*

1. Distribute a set of *Help Wanted* activity sheets to each pair of students.
2. Ask students to find a job for each client of the Animal Actors Unlimited Theatrical Talent Agency. Jobs are advertised in the Help Wanted section of *Modern Mammalian Variety*. Tell students to recommend jobs for each animal by writing the Job Code from the Help Wanted section next to the animal's name on the client list.

Follow Up (optional)

1. Ask students to write job descriptions for:
   a. another animal at the Field Museum,
   b. a pet,
   c. an insect of their choice (bee, mosquito, butterfly, flea, fly, etc.).
2. Challenge students to think of other animals that fit the job requirements.

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Modern Mammalian Variety

The Newspaper for the Aspiring Animal Actor

Help Wanted

Feline Actor needed for starring role in *Praying for Predators* to be filmed on location in Venezuela. Must be adept at camouflage and provide own spotted fur coat. Work rules prohibit actors from eating natural prey (such as capybaras) while on set. Job Code SPF.

Emas Pictures International seeks **Ant and Termite Control Expert** for on location work in Brazil. Long tongue helpful. Must be able to locate tall termite mounds. Job Code KST.

Acting Family of large rodents needed for victim role in *Praying for Predators,* a Venezuelan stalking movie to be filmed near Lake Maracaibo. Must be able to work with natural enemies such as jaguars. Job Code CWV.

Announcement: Arctic Advertising Associates announces major new campaign for animal hair coloring product. Need the right **Model** for "before" photos. Benefits include VIP cafeteria with all-the-seals-you-can-eat special. Send photos of your white hair to our office in Barrow, Alaska. Job Code SVT.

Help Wanted (continued)

Big Hoofers needed for new musical, *The Saga of Davidson Mountains.* Tired of finding only seasonal work in December? In this film both males and females will wear their antlers proudly. Apply now! Contact Arctic National Wildlife Pictures, Inc. in Alaska. Job Code EYJ.

Position open: **Set Carpenter** needed to cut down trees and construct dam for upcoming feature film, *White Deer Lake Adventures.* Wide flat tail required. Send sample of gnawed branch to Michigan Casting, Inc. Job Code SLX.

Feminine Feline and Two Cubs needed for TV quiz show, *Fact or Fiction.* Leave your cave in the woods and see the world. Contact KNTV (Kaibab National Television) for more information. Job Code XPQ.

Stunt Double needed for camel—we provide the hump. Relatives of camels encouraged to apply. Se habla español. Send resume to Glaciares National Pictures, Santa Cruz, Argentina. Job Code NNR.

Help Wanted (continued)

Wanted **Deerlike Actor** for this desert spectacular to be filmed on location in the Chihuahuan Desert in Mexico. If you like sand, sun, and cactus, you are made for this film. Apply to Mapimi Films International, Chihuahua, Mexico. Job Code LBR.

Searching for the right **Bear**. Position still open. Desperate. 30 year search as yet to find the one to fill this role in *Missing in the Sierra Madre.* Se habla Español. Contact Extinct Animal Productions. Job Code VPD.

Actors needed for starring roles in nature movie, *Life Without Trees,* to be filmed next winter on location in the Northwest Territories of Canada. Dress code requires heavy brown fur coat. Shaggy hair acceptable. Curving horns optional. Send photos to Thelon Crane, Media Inc, Northwest Territories, Canada. Job Code KMS.

Nature Actors needed for dramatic film exploring the life of forest dwellers. Antlers optional. Wear brown and beige fur coats to auditions at Roosevelt Studios, Olympic Mountains. Washington. Job Code JGD.

Help Wanted (continued)

Stunt Doubles needed for *The Three Little Pigs* film. If you look like a thin tan pig, you future could be assured. Apply to Porcine Studios, Pantanal National Pictures. Job Code NFP.

Bear needed for starring role in *The Land of the Giants.* Free accommodations provided in Alaska, plus all the fish you can catch. Job Code PTR.

Needed: **Large-Eared Actors** for grand parts in new play by Kaibab Repertory Theater Company. Submit photo of ears and hoof prints to our Arizona office. We can work with stubborn actors. Job Code TRD.

Immediate Openings! **Herd of Extras** needed for Buffalo Bill's Wild West Show. Must be able to migrate on ring master's command. Costume is hooves and basic brown fur coat. Job Code PFD.

Lead Role in educational remake of *The Rocky Show.* Large antlers a must. Contact Mr. Fido Peabody, Whatsmatta University, Frostbite Falls, Minnesota. Job Code LFL.

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Animals Actors Unlimited Theatrical Talent Agency

The hardest part of working in the glamorous world of entertainment is finding work. Help these out-of-work animals find jobs. Walk through the exhibit *Into the Wilderness*. Cast each animal in the part best suited to its talents.

Animal (Museum #)	**Job Code**	**Animal** (Museum #)	**Job Code**
Beaver (#149)	— — —	Bison = American Buffalo (#166)	— — —
Cougar (#151)	— — —	Musk Oxen (#169)	— — —
Jaguar (#153)	— — —	Alaskan Brown Bear (#170)	— — —

Capybara (#155)	— — —	Polar Bear (#173)	— — —
Anteater (#157)	— — —	Mexican Grizzly (#176)	— — —
Marsh Deer (#158) NOT AVAILABLE Got lead in Swamp Thing	—	Moose (#181)	— — —

Tapir (#161)	— — —	Roosevelt Elk (#184)	— — —
Caribou = Reindeer (#162)	— — —	Mule Deer (#185)	— — —
Guanaco (#165)	— — —	Pronghorn (#188)	— — —

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Animal (Museum #)	Job Code
Beaver (#149)	S L X
Cougar (#151)	X P Q
Jaguar (#155)	S P F
Capybara (#155)	C V W
Anteater (#157)	K S T
Marsh Deer (#158)	NOT AVAILABLE Got lead in Swamp Thing —
Tapir (#161)	N F P
Caribou = Reindeer (#162)	E Y J
Guanaco (#165)	N M R

Animal (Museum #)	Job Code
Bison = American Buffalo (#166)	P F D
Musk Oxen (#169)	K M S
Alaskan Brown Bear (#170)	P T R
Polar Bear (#173)	S V T
Mexican Grizzly (#176)	V P D
Moose (#181)	L F L
Roosevelt Elk (#184)	J G D
Mule Deer (#185)	T R D
Pronghorn (#188)	L B R

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Identity Crisis

Skills

- Classifying
- Drawing conclusions
- Observing
- Recording data

In Brief

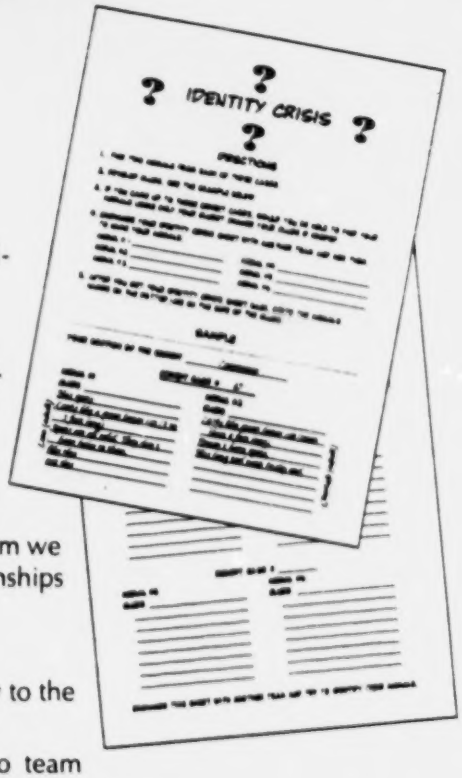
Students observe animals and develop a simple classification system based on their own criteria.

Goal

To develop the science skills of observing and classifying.

Background

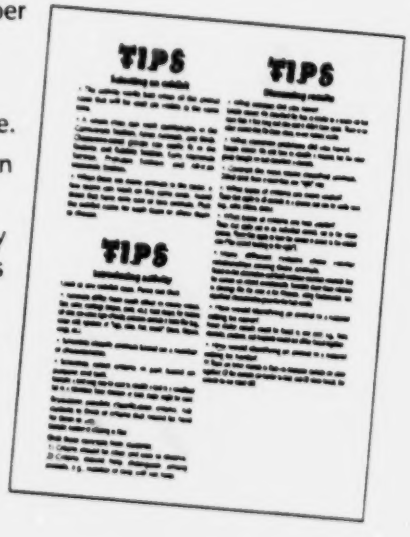
Scientists must identify organisms in order to study them and to tell others about them. Many classification systems have existed: a good one identifies animals clearly. In the 18th century the scientist Lineaus developed the clear system we use today. Classification reveals the fundamental relationships among animals.



Directions

NOTE: Explain activity at school or on the bus on the way to the Museum.

1. Divide students into teams of three. Suggest that two team members gather the needed information and the other member record and evaluate it.
2. Select an exhibit hall. See *Tips* on the following page.
3. Introduce activity (2–5 minutes). See *Tips* on the following page.
4. Show students the exhibit cases they will use and give an *Identity Crisis* activity sheet to each team. (5–10 minutes)
5. Direct teams to exchange sheets and see if they can correctly identify the selected animals based on the other team's criteria. (5 minutes)
6. Discuss results (5–10 minutes). See *Tips* on the following page.



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TIPS

Selecting an exhibit

- The activity works best when all the animal cases that will be used are visible at the same time.
- A whole class can work comfortably in the Carnivorans, Asian Mammals, Birds of the World, and North American Birds. Chaperone-sized groups can easily fit in the Rodents and Rabbit; Early Mammals; Primates, Bats and Shrews, and African Mammals.
- When there are many animals in the cases, a few teams can work on the same ones. Avoid those that have only one or two animals. Pick the exhibit cases for each team or allow them to choose.

TIPS

Introducing activity

Look at any exhibit case. Point out that:

- Animals differ from each other in many ways.
  Size; color; markings (stripes, spots, etc.); head shape; fur texture; tail size; eye color; type of teeth; common animals it looks like (e.g., house cat); type/size of "legs, arms, feet, hands" (paws, flippers, wings, etc.).
- Scientists classify animals based on a number of characteristics.
- Scientists select criteria in part based on purpose and task.
  Example: a bird song may be used to identify a bird in a woodland but in a laboratory bone structure or beak shape might be used.

Brainstorm possible classification criteria. Ask students to think of criteria that would be hard for them to use.
Example: number of offspring in litter.

Elicit these concepts from students:
(1) Criteria should be clear and easy to observe.
(2) Criteria should help distinguish among animals, e.g., number of eyes will not help.

TIPS

Discussing results

- What success did you have?
  Sample answer: We described the lion as similar to a house cat but more than 4 feet long and also said it didn't have spots. There is no other animal that fits these clues, so our system works.
- What common problems did you have?
  Sample answer: We told how to identify a leopard, but the other group thought we had described a cheetah.
- Contrast the ways teams classified animals.
  Critical point: there is more than one "right" way.
- What types of criteria are more useful?
  Those that apply to all animals in a species and can be easily seen (e.g., color, stripes, spots.).
- What types of criteria are less useful?
  Those that apply just to an individual animal, not to the whole species. Those that apply to how the animal is posed in the exhibit case ("the animal looking to the right").
- Many different systems show similar relationships among these animals.
  Based on this observation and fossil evidence scientists conclude that the animals are related evolutionarily. Scientists show these relations in drawings like the ones at the Museum. Using fundamental, less superficial characteristics gives the the best results.
- How would identifying an animal in a natural setting be easier?
  Fewer similar animals would be found in one area: e.g., lions, cheetahs, panthers, and leopards would not all be found together.
- How would identifying an animal in a natural setting be harder?
  (1) There are fewer animals to find—in museums animals are close together; (2) the animals are harder to find; and (3) when found, the animals do not stand still.

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IDENTITY CRISIS

DIRECTIONS

1. PICK TWO ANIMALS FROM EACH OF THREE CASES.
2. DEVELOP CLUES. SEE THE EXAMPLE BELOW.
3. IF YOU CAME UP TO THESE EXHIBIT CASES, WOULD YOU BE ABLE TO FIND YOUR ANIMALS USING ONLY YOUR CLUES? CHANGE YOUR CLUES IF NEEDED.
4. EXCHANGE YOUR IDENTITY CRISIS SHEET WITH ANOTHER TEAM AND ASK THEM TO NAME YOUR ANIMALS.

ANIMAL # 1 _____ ANIMAL #4 _____
ANIMAL #2 _____ ANIMAL #5 _____
ANIMAL #3 _____ ANIMAL #6 _____

5. AFTER YOU GET YOUR IDENTITY CRISIS SHEET BACK, WRITE THE ANIMALS NAMES ON THE DOTTED LINE ON THE SIDE OF THE CLUES.

SAMPLE

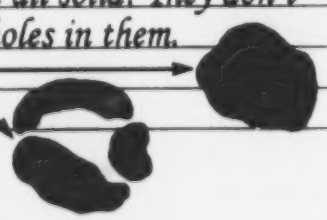
YOUR SECTION OF THE EXHIBIT *Carnivorans*

EXHIBIT CASE # *87*

ANIMAL #1

CLUES

Has spots
Looks like a giant house cat (2 to 3 feet long)
Spots are all solid. They don't have holes in them.
like this →
not this ↘



Cheetah (adult)

ANIMAL #2

CLUES

Looks like giant house cat (more than 4 feet long).
Doesn't have spots.
Has long tail with bushy end.

Lion (adult)

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IDENTITY CRISIS

YOUR SECTION OF THE EXHIBIT _____

EXHIBIT CASE # _____

ANIMAL #1

CLUES _____

ANIMAL #2

CLUES _____

EXHIBIT CASE # _____

ANIMAL #3

CLUES _____

ANIMAL #4

CLUES _____

EXHIBIT CASE # _____

ANIMAL #5

CLUES _____

ANIMAL #6

CLUES _____

EXCHANGE THIS SHEET WITH ANOTHER TEAM AND TRY TO IDENTIFY THEIR ANIMALS.

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Frozen in Time!

Skills

- Analyzing
- Imagining
- Observing
- Predicting

In Brief

After carefully observing a diorama, students complete a comic strip.

Background

A diorama is a moment frozen in time. Students can bring a diorama to life with their imaginations. The ability to imagine, to examine a world that might be or that might have been, to speculate about outcomes, to ask "What if...?"—these are skills scientists use daily. This activity helps develop the those skills.

Directions

Note: You may wish to explain the activity at school or on the bus on the way to the Museum.

1. Divide students into teams of three. Suggest that two team members gather the needed information and the other member record and evaluate it. [Alternative: ask students to complete this activity working individually.]
2. Pick any diorama. Ask students what is realistic about it. The animals are real (the plants are realistic models) and would be found living in that habitat. The animals are in natural poses. Number of offspring is accurate.
3. Ask what is unrealistic about it. The dioramas are "compressed." In reality, the animals would be spread out, would not stand still, and might not be active at the same time of day. Also some animal groups are unrealistic—for example, a diorama might show an adult male bear, an adult female bear , and a cub together. This would be very unusual. Scientists that study bears know that in some species the adult males may kill cubs they encounter; so adult males usually would not be found with an adult female and a cub.
4. Ask what will happen next. What happened 5 minutes ago? How will this scene be different in 5 minutes? a week? a month? 3 months? a year?
5. Give students *Frozen in Time!* activity sheets and ask them to complete the unfinished panels (always panel #3).

Extensions

1. After students have finished, ask each team to tell the group briefly about its interpretation of the diorama.
2. Ask each team to pick a different diorama, decide on a story with team, and tell the story to the group—in the exhibit hall, at lunch, or back at school.
3. Suggest students color their *Frozen in Time!* activity sheets. Make a field trip bulletin board and display them in class.

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FROZEN IN TIME!

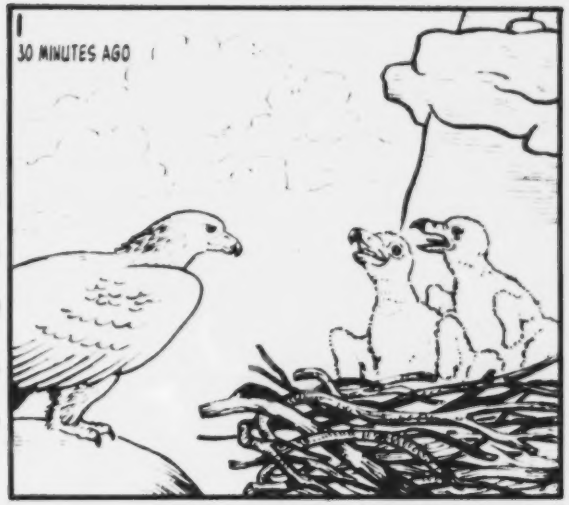
LOOK AT THE DIORAMA OF THE GOLDEN EAGLE NEST [MUSEUM # **6**]. THIS IS A MOMENT FROZEN IN TIME.

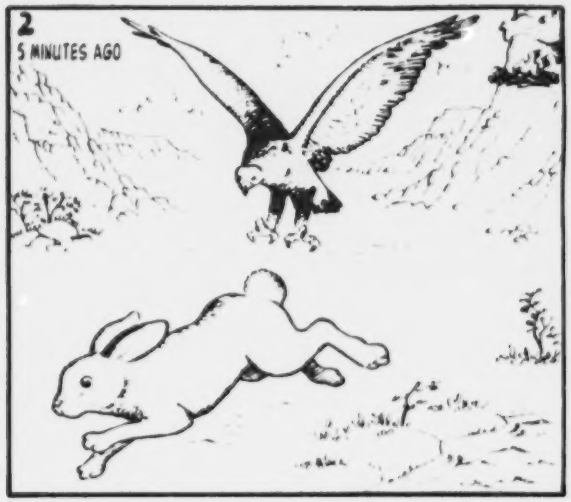
TRY TO BRING THE DIORAMA TO LIFE.

IMAGINE IF IT IS WARM OR COLD, WINDY OR STILL.

THINK ABOUT THE SCENE.

COMPLETE THE UNFINISHED PANEL.





VISIT THESE RELATED EXHIBITS!

EXAMINE THE GOLDEN EAGLE IN BIRDS OF NORTH AMERICA [MUSEUM # **60**].
COMPARE THIS RESTING POSE TO THE ACTIVE ONE IN THE DIORAMA.

FEEL THE SHARP CLAW OF METAL GOLDEN EAGLE FOOT [MUSEUM # **60**].
IMAGINE HOW WELL IT WORKS FOR CAPTURING FOOD (LIKE THE RABBIT) FOR YOUNG EAGLETS.

LOOK AT THE FEET OF THE VERY LARGE BIRDS [MUSEUM # **82**] LIKE THE OSTRICH.
THINK ABOUT THE PROBLEMS THEY WOULD HAVE KILLING A RABBIT EVEN THOUGH THEY ARE SO LARGE.

CHOOSE ANOTHER DIORAMA AND **IMAGINE** WHAT WOULD HAPPEN IF YOU ENTERED THAT SCENE.

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ANSWER KEY

FROZEN IN TIME!

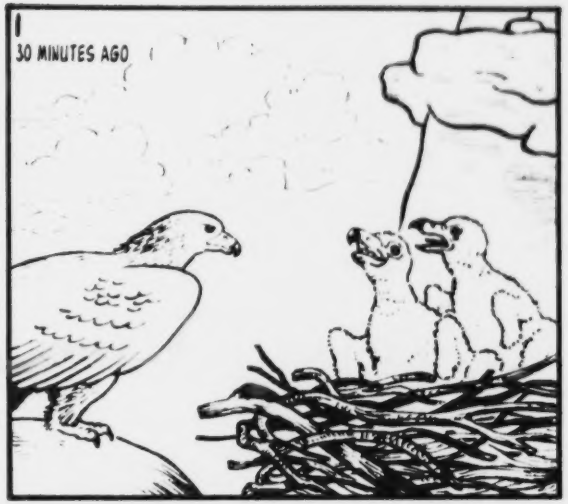
LOOK AT THE DIORAMA OF THE GOLDEN EAGLE NEST [MUSEUM # **6**]. THIS IS A MOMENT FROZEN IN TIME.

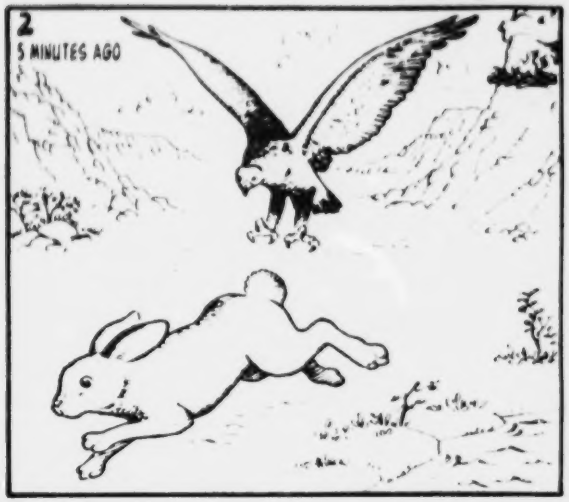
TRY TO BRING THE DIORAMA TO LIFE.

IMAGINE IF IT IS WARM OR COLD, WINDY OR STILL.

THINK ABOUT THE SCENE.

COMPLETE THE UNFINISHED PANEL.





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VISIT THESE RELATED EXHIBITS!

EXAMINE THE GOLDEN EAGLE IN BIRDS OF NORTH AMERICA [MUSEUM # **60**].
COMPARE THIS RESTING POSE TO THE ACTIVE ONE IN THE DIORAMA.

FEEL THE SHARP CLAW OF METAL GOLDEN EAGLE FOOT [MUSEUM # **60**].
IMAGINE HOW WELL IT WORKS FOR CAPTURING FOOD (LIKE THE RABBIT) FOR YOUNG EAGLETS.

LOOK AT THE FEET OF THE VERY LARGE BIRDS [MUSEUM # **82**] LIKE THE OSTRICH.
THINK ABOUT THE PROBLEMS THEY WOULD HAVE KILLING A RABBIT EVEN THOUGH THEY ARE SO LARGE.

CHOOSE ANOTHER DIORAMA AND **IMAGINE** WHAT WOULD HAPPEN IF YOU ENTERED THAT SCENE.

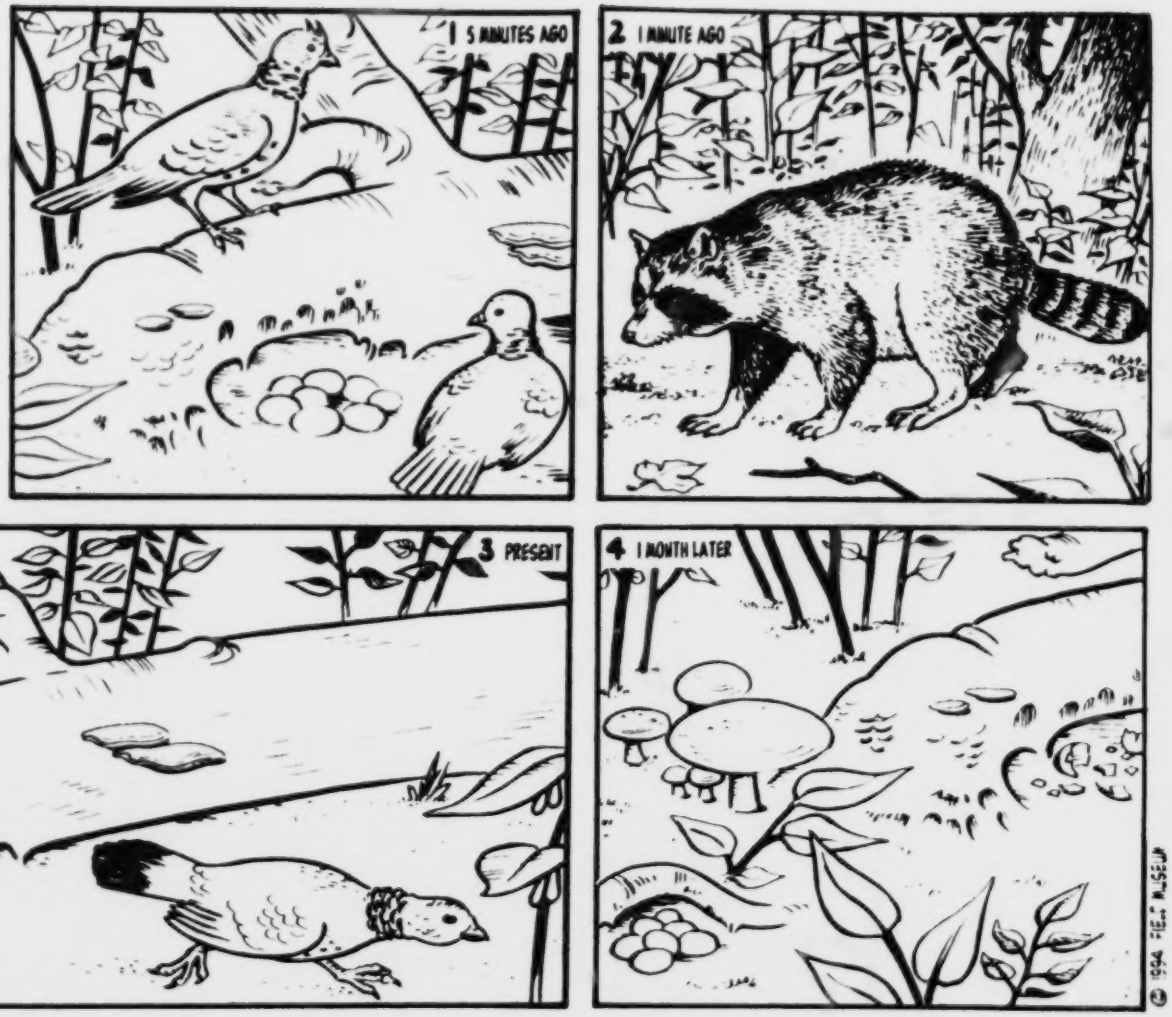
FROZEN IN TIME!

LOOK AT THE DIORAMA OF THE RUFFED GROUSE AND THE RACCOON [MUSEUM # **25**]. THIS IS A MOMENT FROZEN IN TIME.

TRY TO BRING THE DIORAMA TO LIFE.
IMAGINE WHAT SEASON IT IS AND IF IS WARM OR COLD, WINDY OR STILL.

THINK ABOUT THE SCENE.

COMPLETE THE UNFINISHED PANEL.



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LOOK AT THE DIORAMA FROM A DIFFERENT SIDE.

FIND A BUTTERFLY AND BUT A **B** ON YOUR DRAWING WHERE IT BELONGS.
FIND A BEETLE AND PUT A **B** ON YOUR DRAWING WHERE IT BELONGS.

COUNT THE NUMBER OF EGGS. **IMAGINE** IF NO EGGS WERE EVER EATEN AND ALL HATCHED TO BIRDS THAT HAD MORE EGGS AND NONE WERE EATEN AND ALL HATCHED, ETC. **THINK** ABOUT WHAT MIGHT HAPPEN TO THE FOOD THE BIRDS EAT.

LOOK AT RACCOON 15 FEET TO THE RIGHT OF THE DIORAMA [MUSEUM # **27**]. LIKE THE OTHER ANIMALS IN THIS CASE, RACCOONS LIVE IN THE CHICAGO AREA.

CHOOSE ANOTHER DIORAMA AND **IMAGINE** WHAT WOULD HAPPEN IF YOU ENTERED THAT SCENE.

ANSWER KEY

FROZEN IN TIME!

LOOK AT THE DIORAMA OF THE RUFFED GROUSE AND THE RACCOON [MUSEUM # **25**]. THIS IS A MOMENT FROZEN IN TIME.

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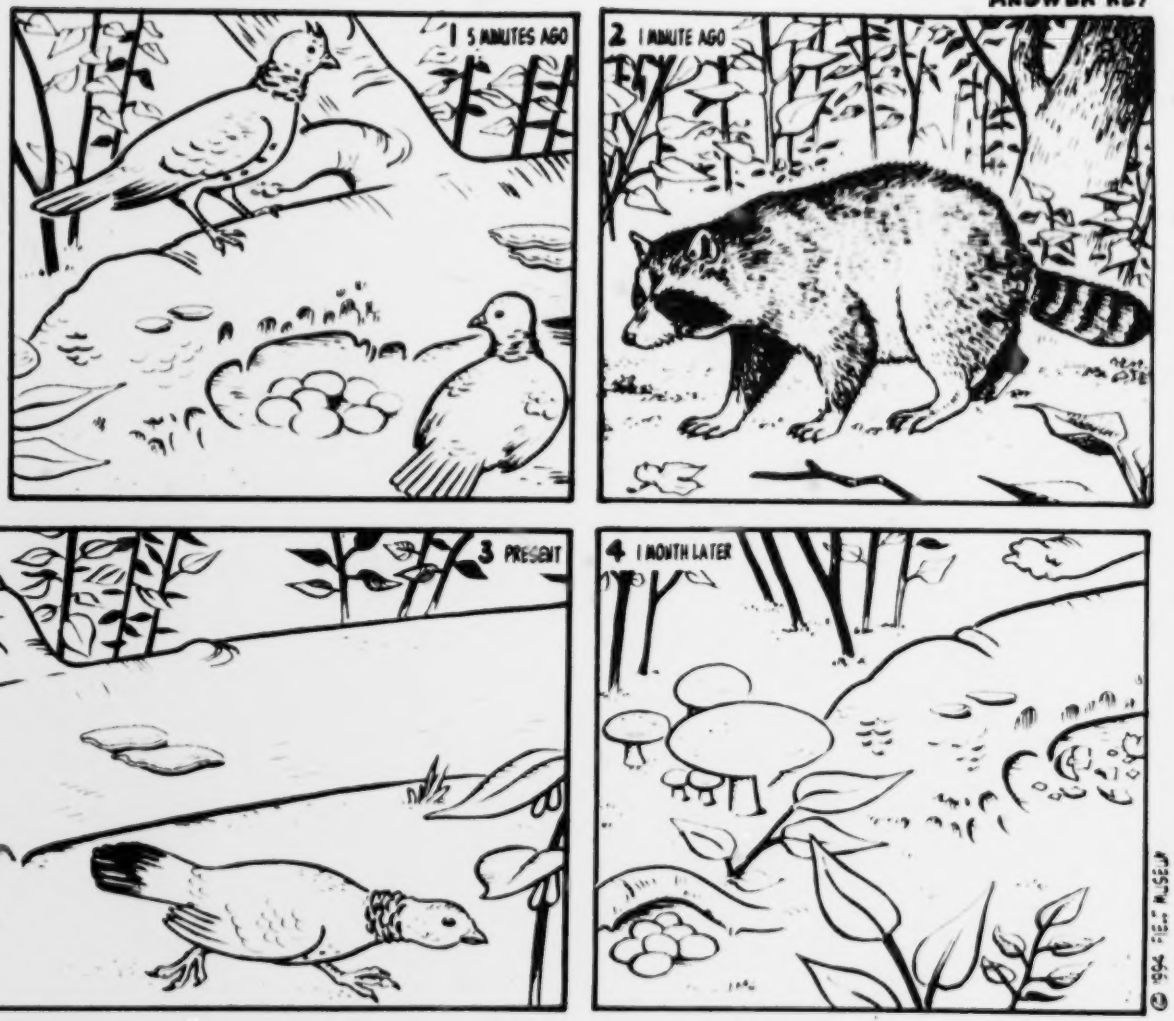
IMAGINE WHAT SEASON IT IS AND IF IS WARM OR COLD, WINDY OR STILL.

THINK ABOUT THE SCENE.

COMPLETE THE UNFINISHED PANEL.



© 1994 FIELD MUSEUM

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CHOOSE ANOTHER DIORAMA AND **IMAGINE** WHAT WOULD HAPPEN IF YOU ENTERED THAT SCENE.

FROZEN IN TIME!

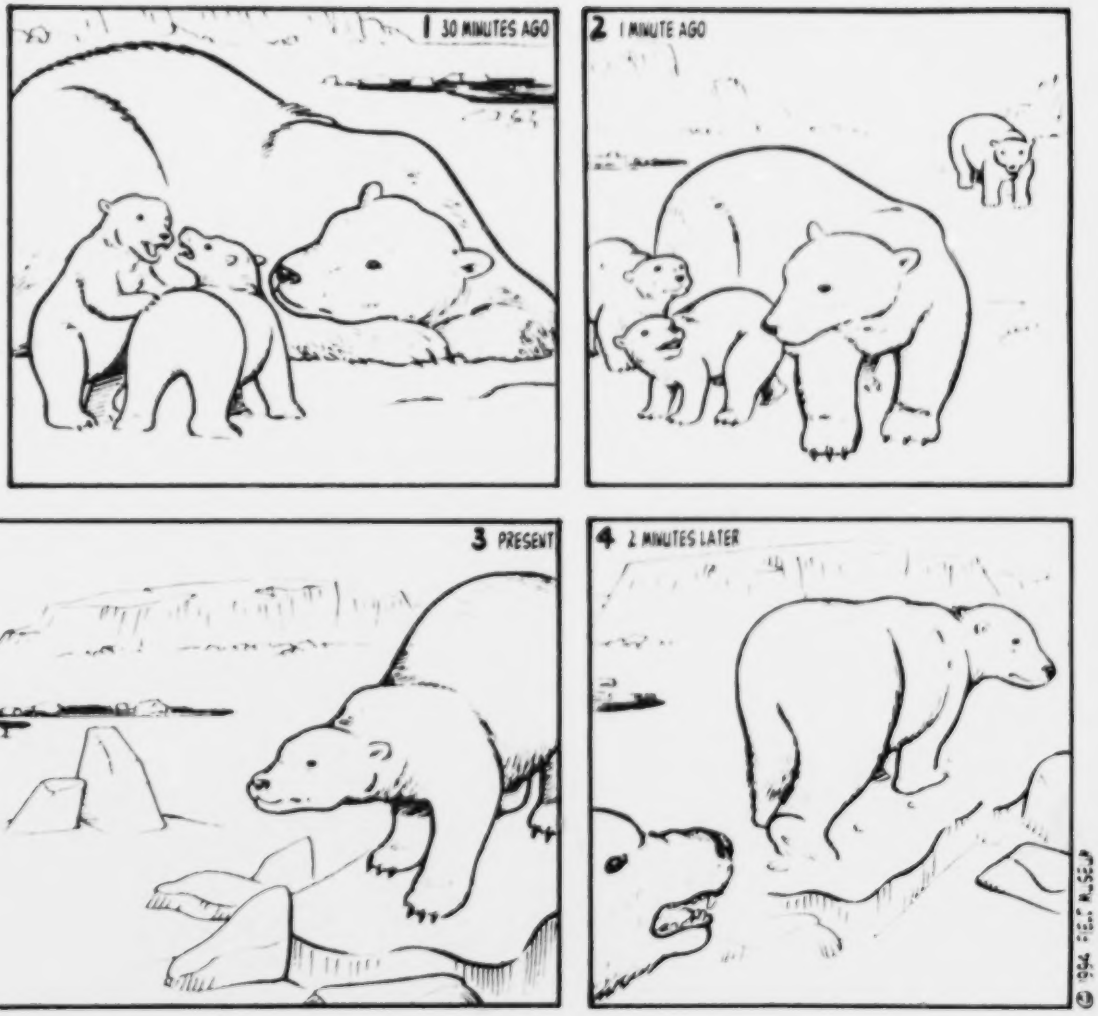
LOOK AT THE POLAR BEAR DIORAMA [MUSEUM #**174**]. THIS IS A MOMENT FROZEN IN TIME.

TRY TO BRING THE DIORAMA TO LIFE.
IMAGINE HOW COLD IT IS, HOW WINDY IT MIGHT BE.

BEARS DO NOT LIVE IN FAMILIES LIKE HUMANS WITH A MOTHER, FATHER, AND CHILDREN. ADULT MALE BEARS MAY THREATEN THE CUBS IF THE MOTHER DOES NOT PROTECT THEM.

THINK ABOUT THE SCENE.

COMPLETE THE UNFINISHED PANEL.



VISIT THESE RELATED EXHIBITS!

LOOK AT THE GLACIER BEARS DIORAMA [MUSEUM #**181**]. **IMAGINE** WHAT MIGHT HAPPEN IF AN ADULT MALE BEAR APPROACHED.

USE THE VIDEO AT *GROWING, GROWING GONE* [MUSEUM #**154**] TO DISCOVER WHERE POLAR BEARS NOW LIVE AND HAVE LIVED.

CHOOSE ANOTHER DIORAMA AND **IMAGINE** WHAT WOULD HAPPEN IF YOU ENTERED THAT SCENE.

ANSWER KEY

FROZEN IN TIME!

LOOK AT THE POLAR BEAR DIORAMA [MUSEUM #**174**]. THIS IS A MOMENT FROZEN IN TIME.

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IMAGINE HOW COLD IT IS, HOW WINDY IT MIGHT BE.

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THINK ABOUT THE SCENE.

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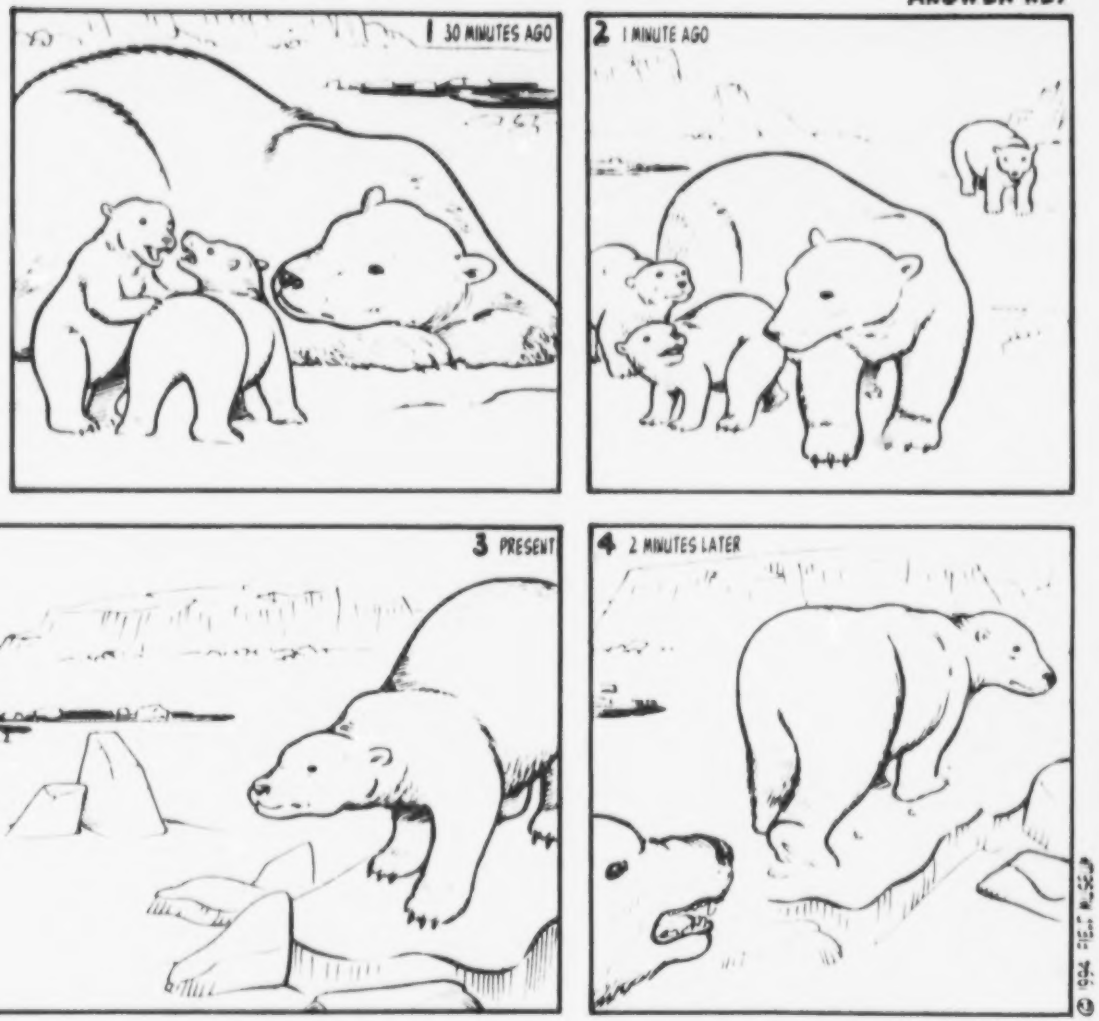

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CHOOSE ANOTHER DIORAMA AND **IMAGINE** WHAT WOULD HAPPEN IF YOU ENTERED THAT SCENE.

Support Yourself

Skills

- Experimenting
- Inferring
- Observing

In Brief

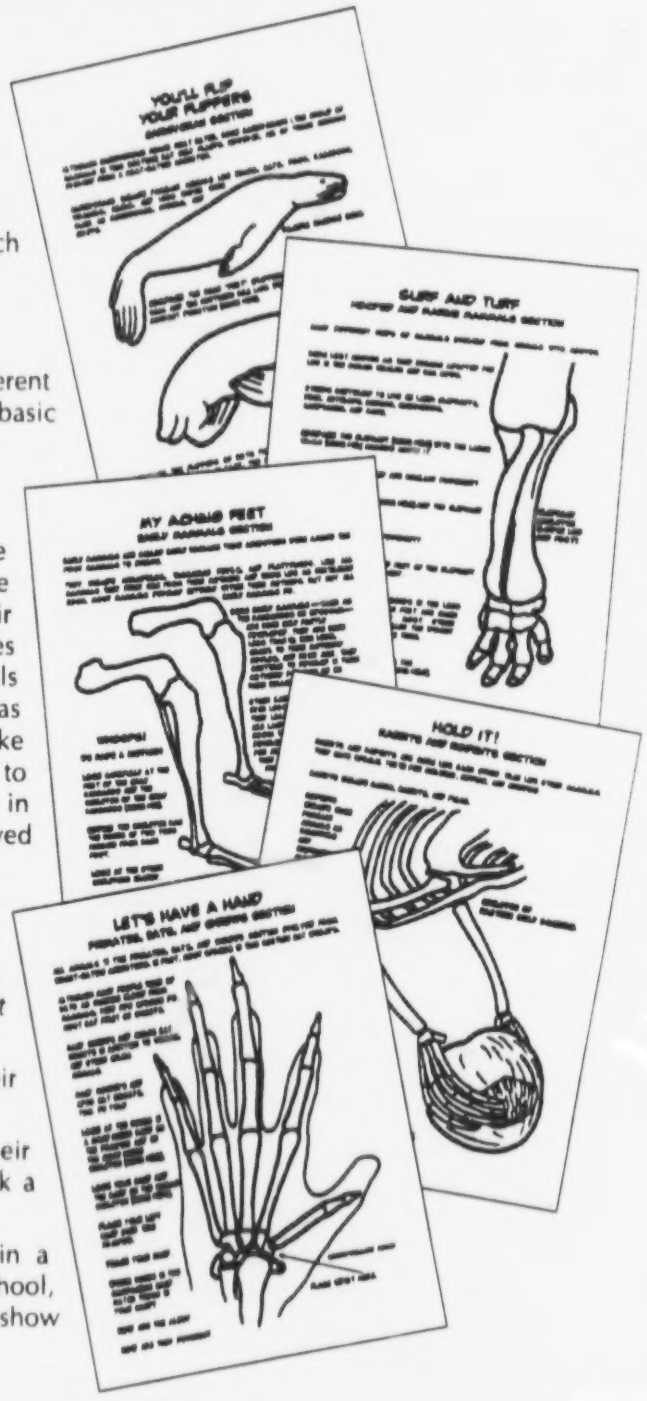
Students will compare the way in which different mammals move.

Goal

Students will appreciate the many different ways mammals move using the same basic bones.

Background

Mammals move in many ways—some walk, some swim, a very few fly. Of those mammals that walk, some walk flat on their feet as humans do; others walk on their toes as cats do; still others walk on their toenails as horses do. Some walk on their knuckles as anteaters do. Some are adapted to swim like seals and manatees. Others have evolved to be able to walk on land and swim well in water—like beavers. Only bats have evolved true flight.



Directions

1. Divide students into teams of three and give each team a different *Support Yourself* activity sheet.
2. Ask each team to observe the "feet" of their animals—(both mounts and skeletons).
3. Challenge them to attempt to move as their animals move. Ask each student to pick a different animal.
4. While waiting for the bus, at lunch, in a corner of the exhibit hall, or back at school, reassemble students. Select students to show the class how their animals move.

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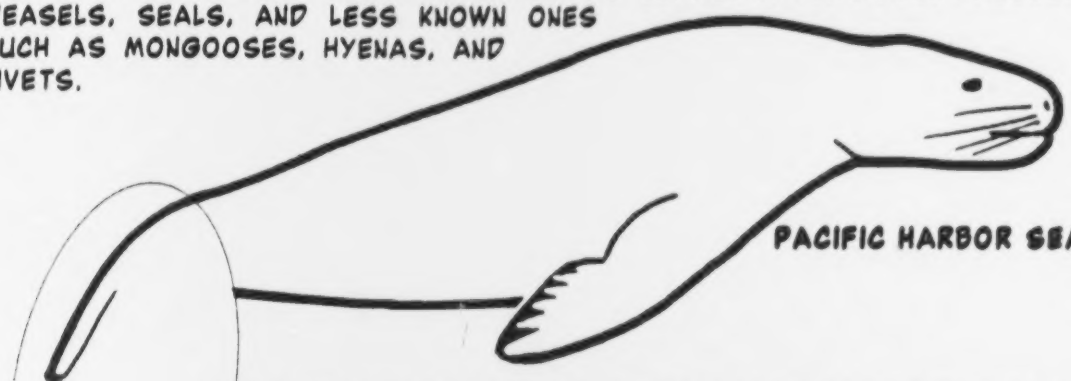
YOU'LL FLIP YOUR FLIPPERS

CARNIVORANS SECTION

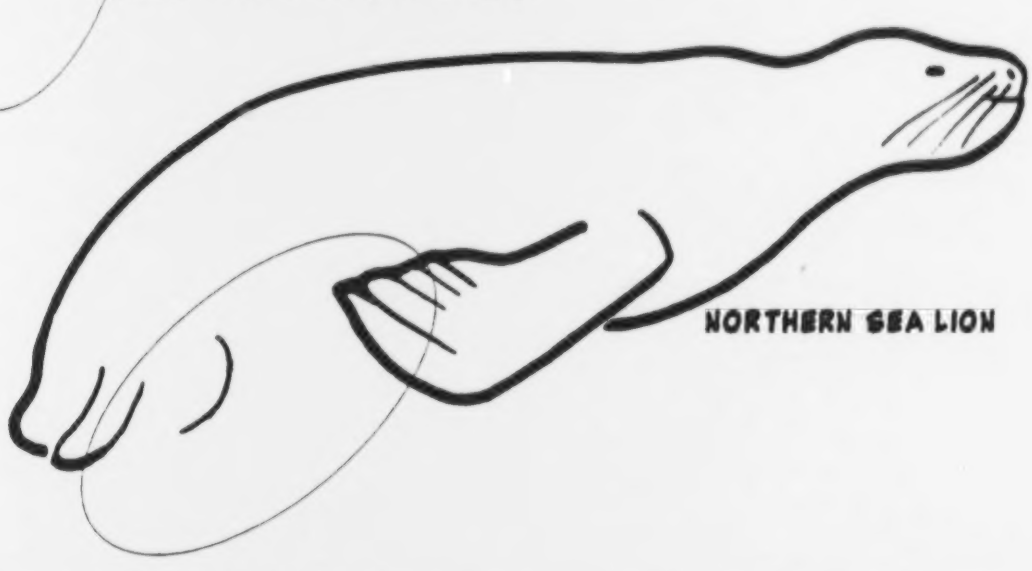
ALTHOUGH CARNIVOROUS MEANS MEAT EATER, SOME CARNIVORANS (THE GROUP OF MAMMALS IN THIS SECTION) EAT ONLY PLANTS. HOWEVER, ALL OF THESE ANIMALS EVOLVED FROM A MEAT-EATING ANCESTOR.

CARNIVORANS INCLUDE FAMILIAR ANIMALS LIKE BEARS, CATS, DOGS, RACCOONS, WEASELS, SEALS, AND LESS KNOWN ONES SUCH AS MONGOOSES, HYENAS, AND CIVETS.



PACIFIC HARBOR SEAL

COMPARE THE REAR "FEET" (FLIPPERS) OF THE PACIFIC HARBOR SEAL AND THE NORTHERN SEA LION. **DRAW** IN THE FLIPPERS IN THE CORRECT DIRECTION [MUSEUM # **100**].



NORTHERN SEA LION

ALTHOUGH THE FLIPPERS OF BOTH THESE ANIMALS WORK WELL, THE ANIMALS EVOLVED DIFFERENTLY. IN FACT, THE PACIFIC HARBOR SEAL IS TRULY A SEAL. THE NORTHERN SEA LION IS NOT A TRUE SEAL. IT IS MORE CLOSELY RELATED TO WALRUSES.

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YOU'LL FLIP YOUR FLIPPERS

CARNIVORANS SECTION

FIND THESE CARNIVORANS: RACCOON [MUSEUM # **95**], BLACK BEAR [MUSEUM # **98**], PACIFIC HARBOR SEAL [MUSEUM # **100**], AND NORTHERN SEA LION [MUSEUM # **100**].

LOOK AT EACH ANIMAL AND ITS SKELETON. (THERE IS NO BLACK BEAR SKELETON. PRETEND THE SKELETON OF THE HOODED SEAL IS A PACIFIC HARBOR SEAL — THEY ARE VERY SIMILAR.)

IMAGINE HOW EACH WOULD HAVE MOVED.

TRY TO MOVE LIKE EACH ONE.

NOTICE HOW THE "LEGS AND FEET" OF EACH HAVE EVOLVED FOR THE WAY IT MOVES. BECAUSE HUMANS EVOLVED UPRIGHT WALKING, IT IS HARD FOR US TO MOVE LIKE THESE OTHER ANIMALS.

WHICH WAS THE EASIEST TO MOVE LIKE?

WHICH WAS THE HARDEST TO MOVE LIKE?

HOW DOES THIS ANIMAL USUALLY MOVE? **MAKE** AN **X** IN THE BOX.

	WALKS FLAT ON ITS FEET	WALKS ON ITS TOES	WALKS ON ITS TOENAILS	WALKS ON ITS KNUCKLES	SWIMS IN WATER	FLIES THROUGH AIR
RACCOON [MUSEUM # **95**]						
BLACK BEAR (NO SKELETON) [MUSEUM # **98**]						
PACIFIC HARBOR SEAL AND HOODED SEAL [MUSEUM # **100**]						
NORTHERN SEA LION [MUSEUM # **100**]						

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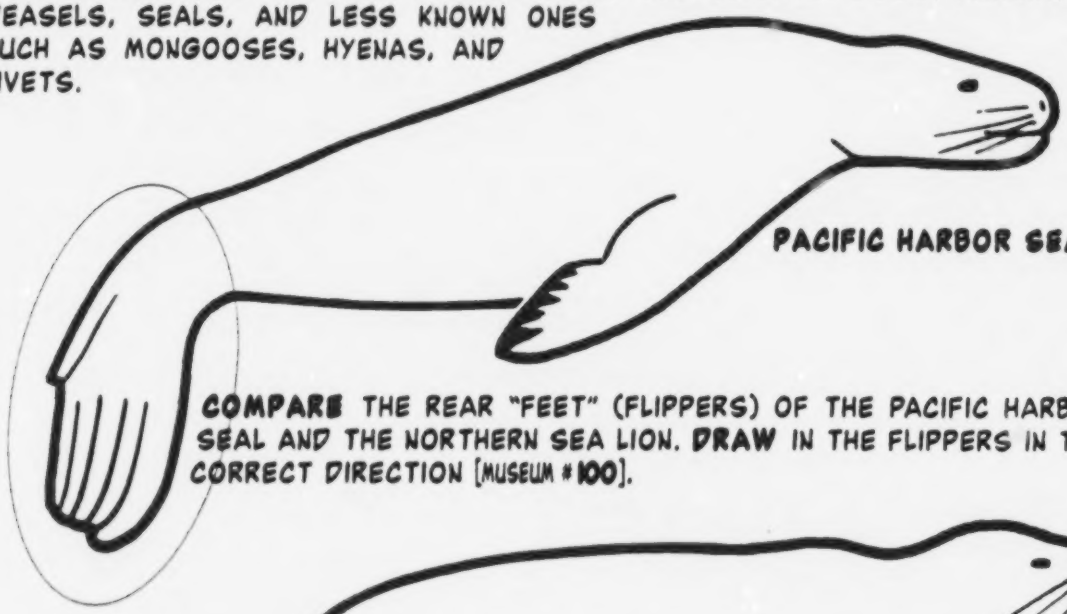

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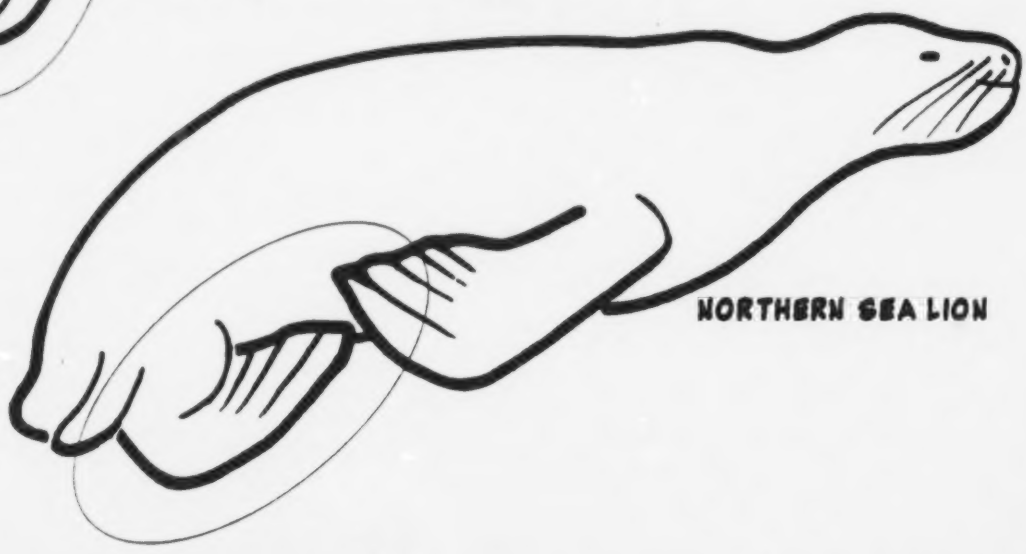

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TRY TO MOVE LIKE EACH ONE.

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RACCOON [MUSEUM # **95**]	X					
BLACK BEAR (NO SKELETON) [MUSEUM # **98**]	X					
PACIFIC HARBOR SEAL AND HOODED SEAL [MUSEUM # **100**]					X	
NORTHERN SEA LION [MUSEUM # **100**]					X	

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SURF AND TURF

HOOFED AND MARINE MAMMALS SECTION

MANY DIFFERENT KINDS OF MAMMALS EVOLVED FROM ANIMALS WITH HOOVES.

SOME LOST HOOVES AS THEY BECAME ADAPTED FOR LIFE IN THE OCEAN: WHALES AND SEA COWS.

OTHERS CONTINUED TO LIVE ON LAND: ELEPHANTS, DEER, ANTELOPE, HORSES, RHINOCEROS, AARDVARKS, AND MORE.

COMPARE THE ELEPHANT [MUSEUM #**120**] WITH THE LARGE WHALE [MUSEUM #**144**] HANGING ABOVE IT.

HOW DO YOU THINK THEY ARE SIMILAR? DIFFERENT?

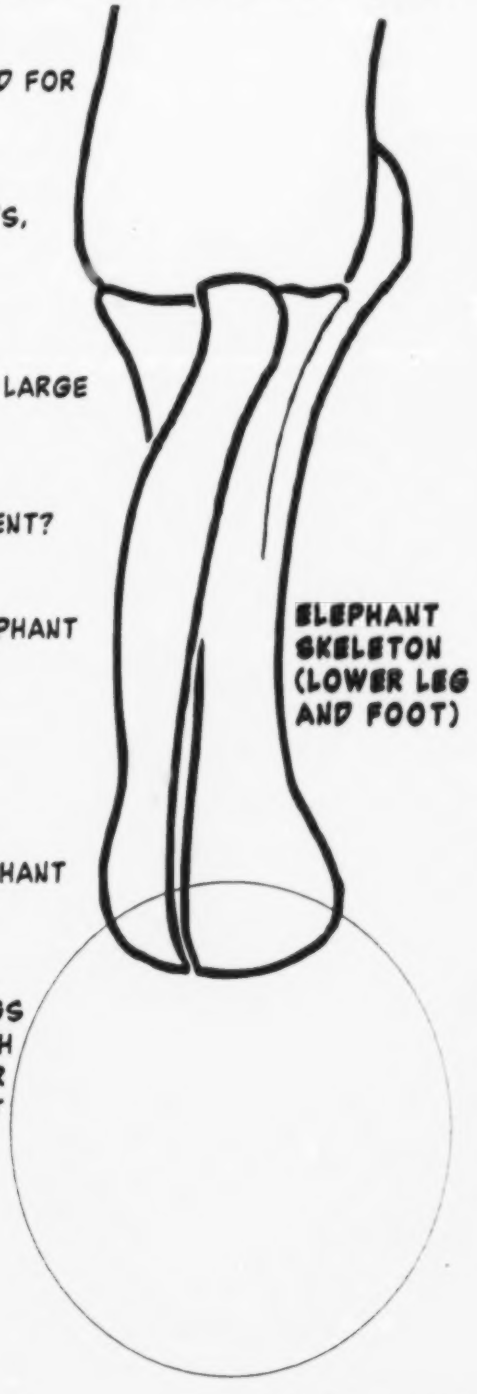
COMPARE THE ZEBRA [MUSEUM #**123**] AND THE ELEPHANT [MUSEUM #**120**].

HOW ARE THEY SIMILAR? DIFFERENT?

NOTICE THAT THE LEGS AND FEET OF THE ELEPHANT MUST SUPPORT A HUGE WEIGHT.

OBSERVE THAT THE LARGE BONES IN THE LEGS AND THE SMALL BONES IN THE FEET ARE MUCH THICKER THAT THOSE OF MOST OTHER MAMMALS. IF THEY WERE SMALLER THE WEIGHT OF THE ELEPHANT WOULD CRUSH THEM.

DRAW THE BONES MISSING FROM THE ELEPHANT'S FRONT LEFT FOOT [MUSEUM #**120**].



ELEPHANT SKELETON (LOWER LEG AND FOOT)

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SURF AND TURF

HOOFED AND MARINE MAMMALS SECTION

FIND THESE ANIMALS IN THE HOOFED AND MARINE MAMMALS SECTION: ZEBRA [MUSEUM #**122** & **123**], BELUGA WHALE [MUSEUM #**147**], BLACK RIGHT WHALE [MUSEUM #**144** & **148**], AND ASIAN ELEPHANT [MUSEUM #**120**].

LOOK AT EACH ANIMAL AND ITS SKELETON.
(GREVY ZEBRA & BURCHELL'S ZEBRA HAVE THE SAME BASIC SKELETON.)

IMAGINE HOW EACH WOULD HAVE MOVED.

TRY TO MOVE LIKE EACH ONE.

NOTICE HOW THE "LEGS AND FEET" OF EACH HAVE EVOLVED FOR THE WAY IT MOVES. BECAUSE HUMANS EVOLVED UPRIGHT WALKING, IT IS HARD FOR US TO MOVE LIKE THESE OTHER ANIMALS.

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ZEBRA [MUSEUM # **122** & **123**]						
BELUGA WHALE [MUSEUM #**147**]						
BLACK RIGHT WHALE. NOTE TINY REAR "LEGS." [MUSEUM # **144** & **148**]						
ASIAN ELEPHANT [MUSEUM #**120**]						

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SURF AND TURF

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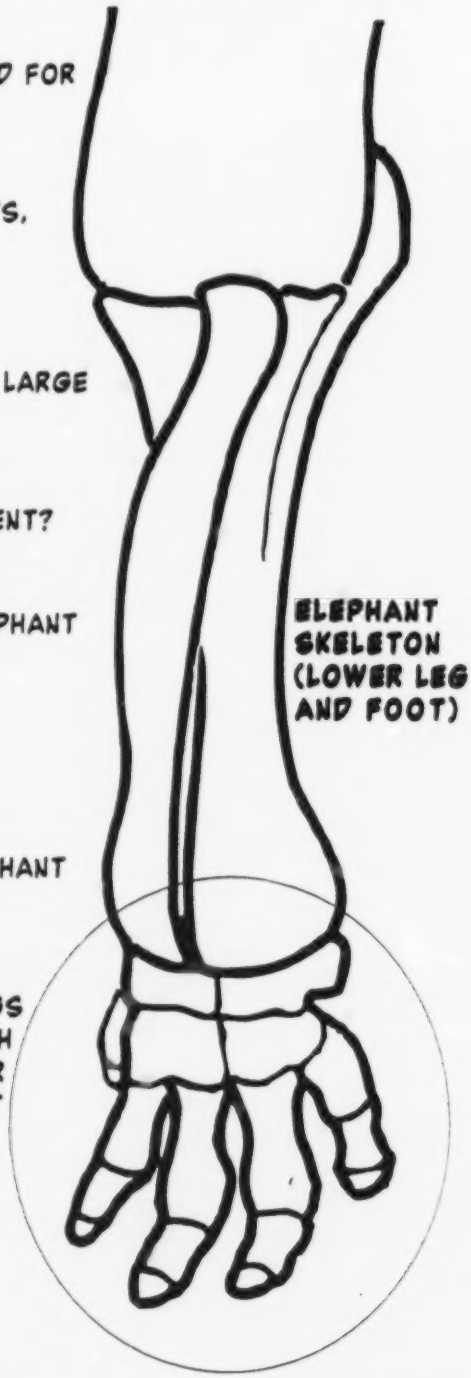

ELEPHANT SKELETON (LOWER LEG AND FOOT)

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SURF AND TURF

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BELUGA WHALE [MUSEUM #**147**]					X	
BLACK RIGHT WHALE. NOTE TINY REAR "LEGS." [MUSEUM # **144** & **148**]					X	
ASIAN ELEPHANT [MUSEUM #**120**]		X				

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MY ACHING FEET
EARLY MAMMALS SECTION

EARLY MAMMALS ARE CALLED EARLY BECAUSE THEIR ANCESTORS WERE AMONG THE FIRST MAMMALS TO EVOLVE.

THEY INCLUDE ARMADILLOS, TASMANIAN DEVILS, AND PLATYPUSES. LIKE ALL MAMMALS THEY DRINK MILK FROM THEIR MOTHERS AND BEGIN LIFE AS FERTILIZED EGGS. MOST MAMMALS DEVELOP ENTIRELY WITHIN THEIR MOTHERS. BUT NOT ALL EARLY MAMMALS DO.

SOME EARLY MAMMALS–SUCH AS THE KANGAROOS–ARE BORN ONLY PARTLY DEVELOPED. THEY CONTINUE TO DEVELOP IN THEIR MOTHERS' POUCHES.

OTHER EARLY MAMMALS ARE EVEN LESS DEVELOPED WHEN THEY LEAVE THE WOMB. THEY ARE LAID BY THEIR MOTHERS AS EGGS!

WHOOPS!

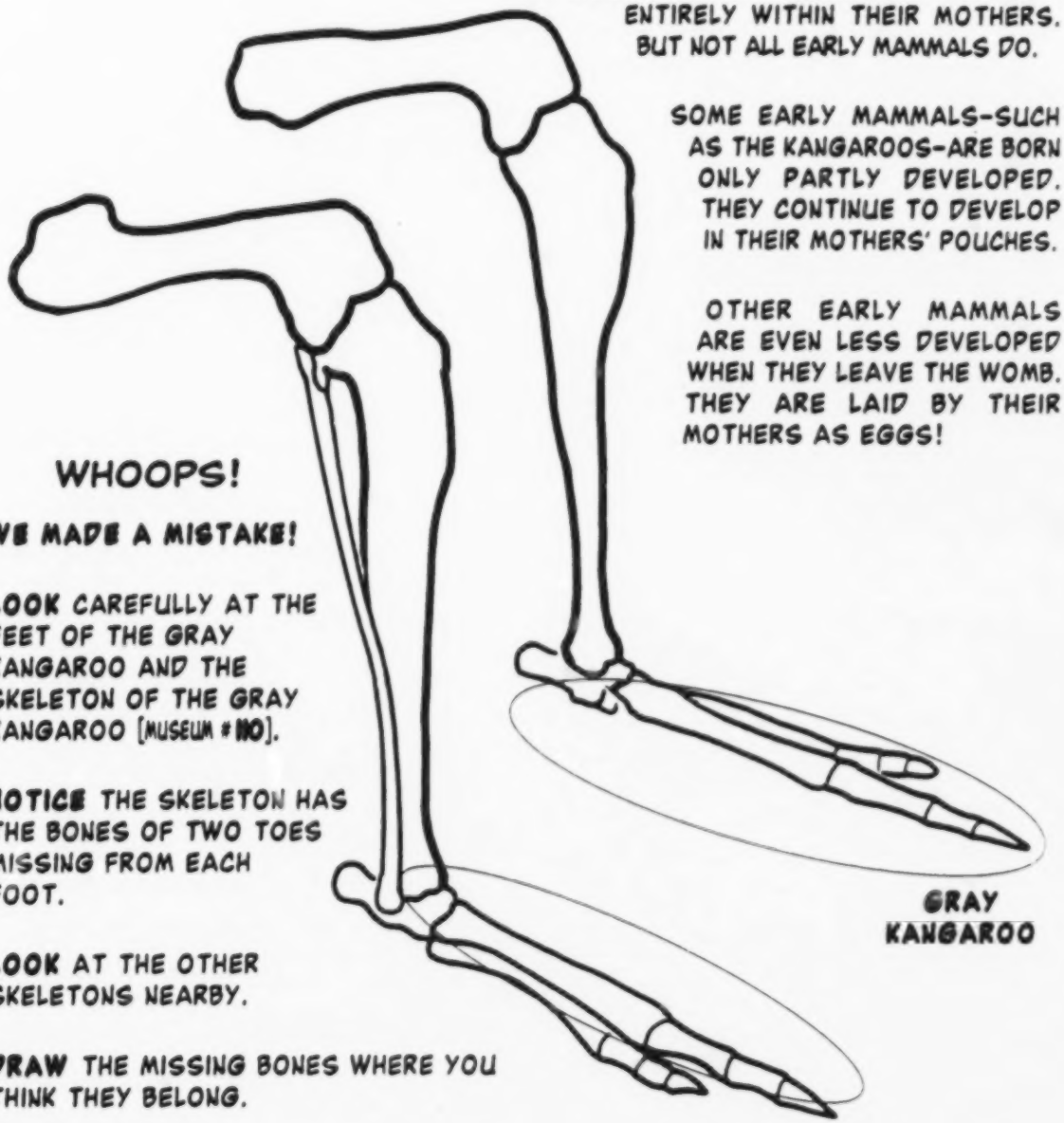
WE MADE A MISTAKE!

LOOK CAREFULLY AT THE FEET OF THE GRAY KANGAROO AND THE SKELETON OF THE GRAY KANGAROO [MUSEUM # 110].

NOTICE THE SKELETON HAS THE BONES OF TWO TOES MISSING FROM EACH FOOT.

LOOK AT THE OTHER SKELETONS NEARBY.

DRAW THE MISSING BONES WHERE YOU THINK THEY BELONG.



GRAY KANGAROO

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MY ACHING FEET
EARLY MAMMALS SECTION

FIND THESE EARLY MAMMALS: GIANT ANTEATER [MUSEUM # **109**], COMMON WOMBAT [MUSEUM # **110**], GRAY KANGAROO [MUSEUM # **110**], AND PLATYPUS [MUSEUM # **112**].

LOOK AT EACH ANIMAL AND ITS SKELETON.

IMAGINE HOW EACH WOULD HAVE MOVED.

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GIANT ANTEATER [MUSEUM # **109**]						
COMMON WOMBAT [MUSEUM # **110**]						
GRAY KANGAROO [MUSEUM # **110**]						
PLATYPUS [MUSEUM # **112**]						

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MY ACHING FEET
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WHOOPS!

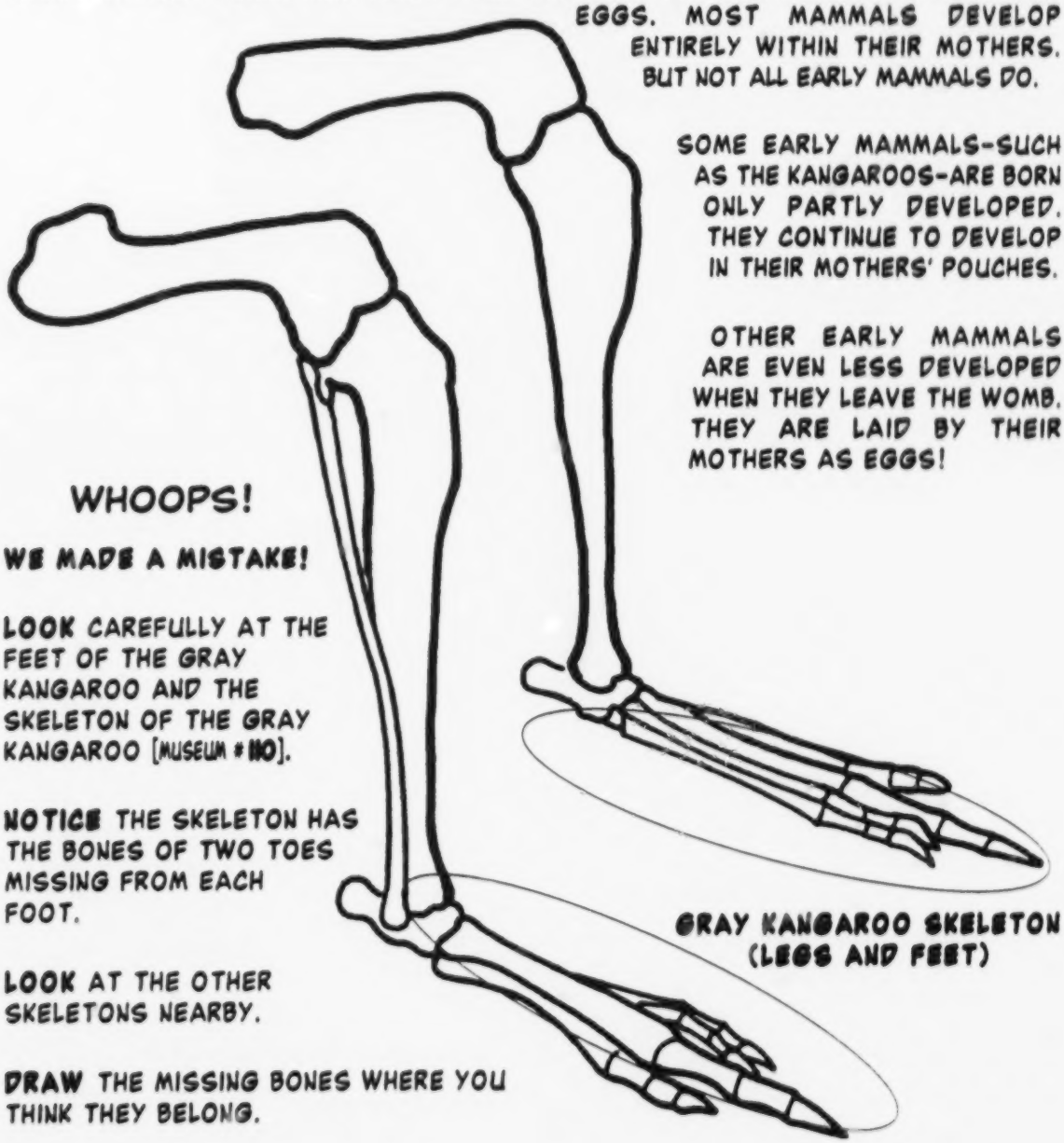
WE MADE A MISTAKE!

LOOK CAREFULLY AT THE FEET OF THE GRAY KANGAROO AND THE SKELETON OF THE GRAY KANGAROO [MUSEUM # **110**].

NOTICE THE SKELETON HAS THE BONES OF TWO TOES MISSING FROM EACH FOOT.

LOOK AT THE OTHER SKELETONS NEARBY.

DRAW THE MISSING BONES WHERE YOU THINK THEY BELONG.



GRAY KANGAROO SKELETON (LEGS AND FEET)

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MY ACHING FEET
EARLY MAMMALS SECTION

FIND THESE EARLY MAMMALS: GIANT ANTEATER [MUSEUM # **109**], COMMON WOMBAT [MUSEUM # **110**], GRAY KANGAROO [MUSEUM # **110**], AND PLATYPUS [MUSEUM # **112**].

LOOK AT EACH ANIMAL AND ITS SKELETON.

IMAGINE HOW EACH WOULD HAVE MOVED.

TRY TO MOVE LIKE EACH ONE.

NOTICE HOW THE LEGS AND FEET OF EACH HAVE EVOLVED FOR THE WAY IT MOVES. BECAUSE HUMANS EVOLVED UPRIGHT WALKING, IT IS HARD FOR US TO MOVE LIKE THESE OTHER ANIMALS.

WHICH WAS THE EASIEST TO MOVE LIKE?

WHICH WAS THE HARDEST TO MOVE LIKE?

HOW DOES THIS ANIMAL USUALLY MOVE? **MAKE** AN **X** IN THE BOX.

	WALKS FLAT ON ITS FEET	WALKS ON ITS TOES	WALKS ON ITS TOENAILS	WALKS ON ITS KNUCKLES	SWIMS IN WATER	FLIES THROUGH AIR
GIANT ANTEATER [MUSEUM # **109**]	X					
COMMON WOMBAT [MUSEUM # **110**]				X		
GRAY KANGAROO [MUSEUM # **110**]	X					
PLATYPUS [MUSEUM # **112**]	X					

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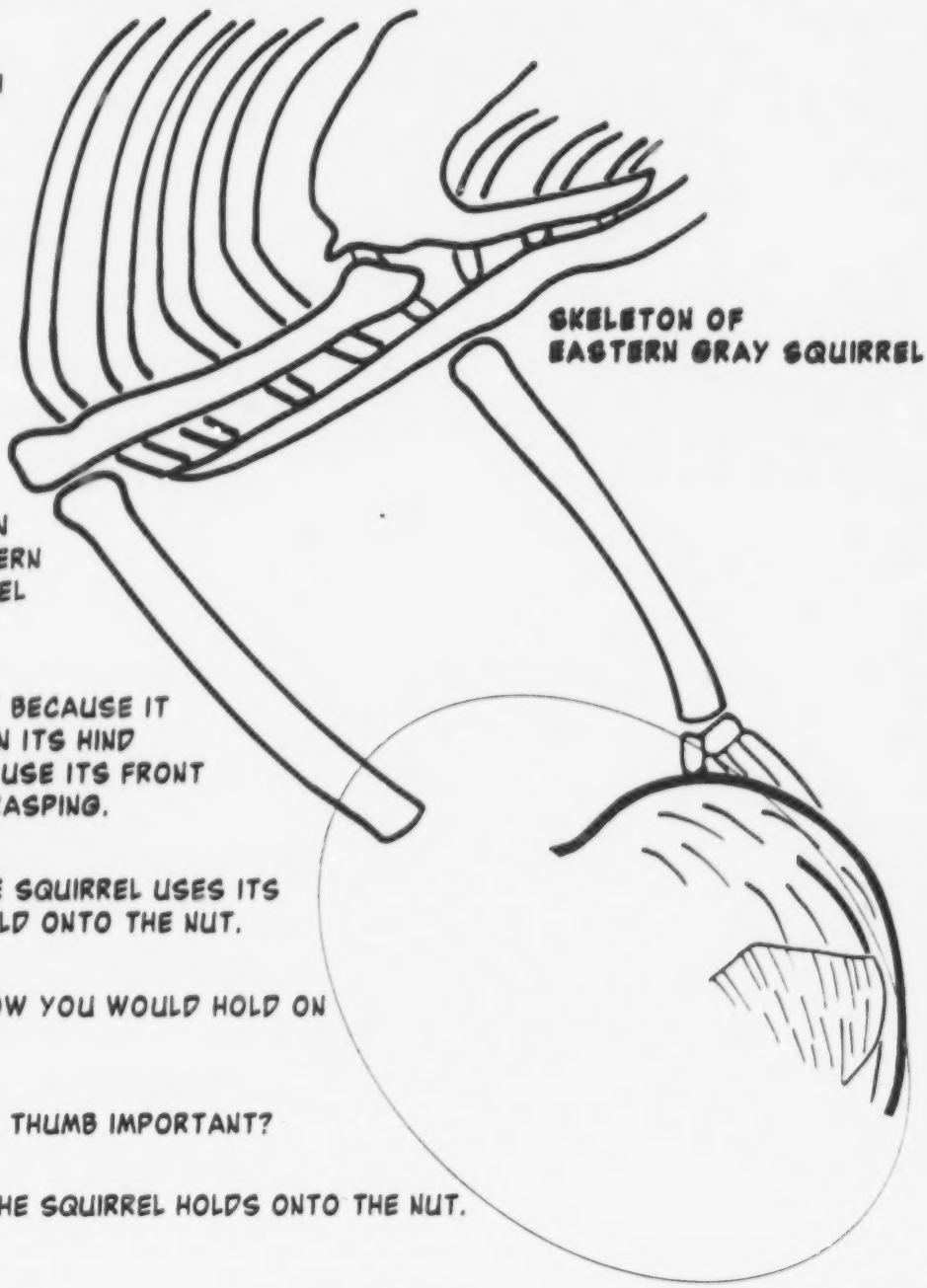
HOLD IT!

RABBITS AND RODENTS SECTION

RABBITS AND RODENTS ARE MORE LIKE EACH OTHER THAN LIKE OTHER MAMMALS. THEY HAVE SPECIAL TEETH FOR GNAWING, NIPPING, AND GRINDING.

RABBITS INCLUDE HARES, RABBITS, AND PICAS.

RODENTS INCLUDE SUCH FAMILIAR ANIMALS AS SQUIRRELS AND CHIPMUNKS, MICE AND RATS, BEAVERS, AND OTHERS.



SKELETON OF EASTERN GRAY SQUIRREL

LOOK AT THE SKELETON OF THE EASTERN GRAY SQUIRREL [MUSEUM # **115**].

NOTICE THAT BECAUSE IT CAN STAND ON ITS HIND LEGS, IT CAN USE ITS FRONT PAWS FOR GRASPING.

SEE HOW THE SQUIRREL USES ITS THUMB TO HOLD ONTO THE NUT.

COMPARE HOW YOU WOULD HOLD ON TO A NUT.

WHY IS YOUR THUMB IMPORTANT?

DRAW HOW THE SQUIRREL HOLDS ONTO THE NUT.

© 1994 The Field Museum

HOLD IT!

RABBITS AND RODENTS SECTION

FIND THESE RABBITS AND RODENTS: WHITE-TAILED JACKRABBIT [MUSEUM # **114**], EASTERN GRAY SQUIRREL [MUSEUM # **115**], BEAVER [MUSEUM # **117**], AND NORTH AMERICAN PORCUPINE [MUSEUM # **117**].

LOOK AT EACH ANIMAL AND ITS SKELETON.
BECAUSE THERE IS NO MOUNT OF THE EASTERN GRAY SQUIRREL, USE THE MEXICAN GRAY SQUIRREL (JUST TO THE RIGHT OF THE EASTERN GRAY SQUIRREL) TO HELP YOU SEE WHAT THE EASTERN GRAY SQUIRREL LOOKS LIKE.

IMAGINE HOW EACH WOULD HAVE MOVED.

TRY TO MOVE LIKE EACH ONE.

NOTICE HOW THE LEGS AND FEET OF EACH HAVE EVOLVED FOR THE WAY IT MOVES. BECAUSE HUMANS EVOLVED UPRIGHT WALKING, IT IS HARD FOR US TO MOVE LIKE THESE OTHER ANIMALS.

WHICH WAS THE EASIEST TO MOVE LIKE?

WHICH WAS THE HARDEST TO MOVE LIKE?

HOW DOES EACH ANIMAL USUALLY MOVE? MAKE AN **X** IN THE BOX.

	WALKS FLAT ON ITS FEET	WALKS ON ITS TOES	WALKS ON ITS TOENAILS	WALKS ON ITS KNUCKLES	SWIMS IN WATER	FLIES THROUGH AIR
WHITE-TAILED JACKRABBIT [MUSEUM # **114**]						
EASTERN GRAY SQUIRREL [MUSEUM # **115**]						
BEAVER [MUSEUM # **117**]						
NORTH AMERICAN PORCUPINE [MUSEUM # **117**]						

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Harris Educational Loan Program

HOLD IT!

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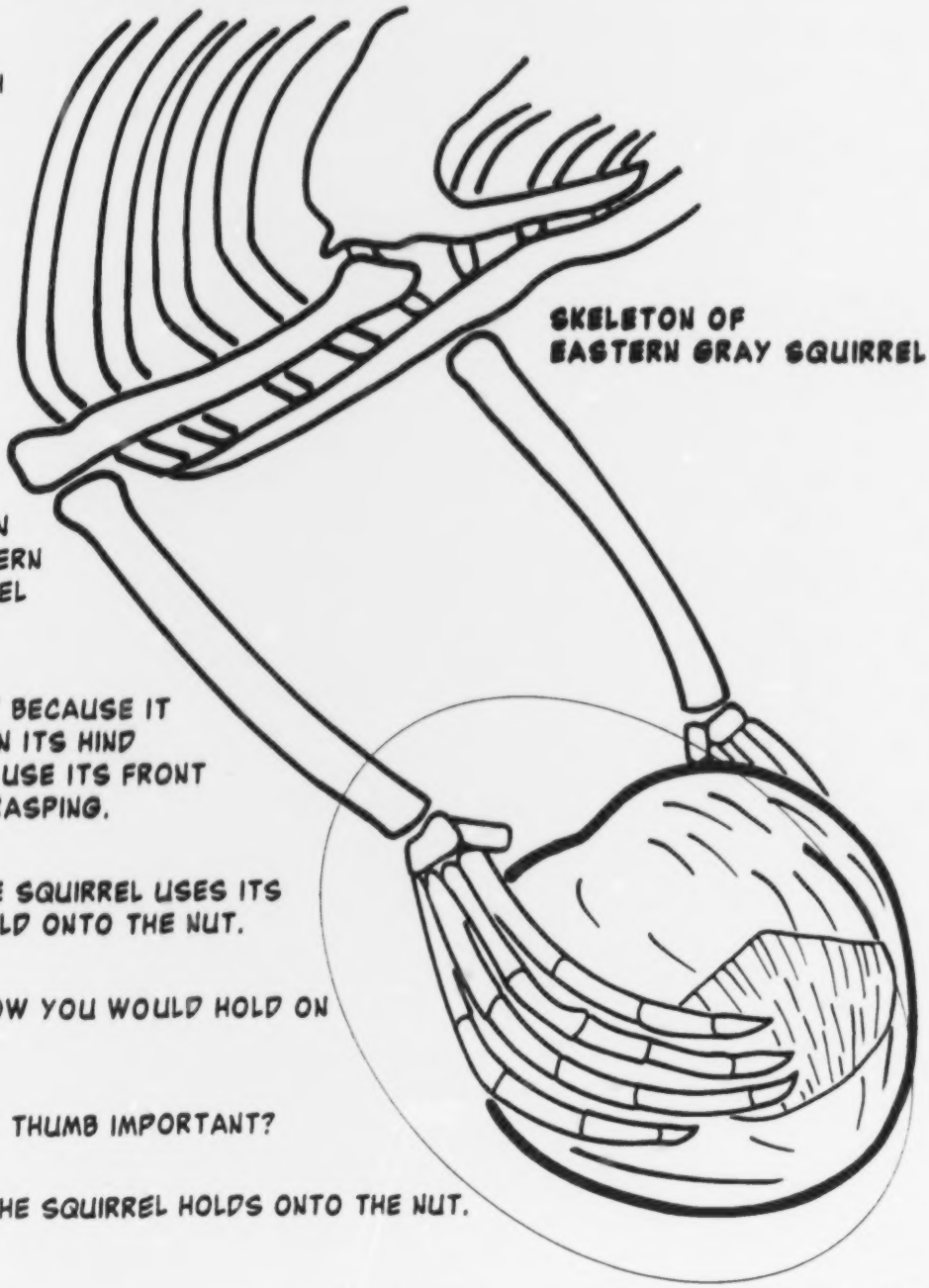

SKELETON OF EASTERN GRAY SQUIRREL

LOOK AT THE SKELETON OF THE EASTERN GRAY SQUIRREL [MUSEUM # **115**].

NOTICE THAT BECAUSE IT CAN STAND ON ITS HIND LEGS, IT CAN USE ITS FRONT PAWS FOR GRASPING.

SEE HOW THE SQUIRREL USES ITS THUMB TO HOLD ONTO THE NUT.

COMPARE HOW YOU WOULD HOLD ON TO A NUT.

WHY IS YOUR THUMB IMPORTANT?

DRAW HOW THE SQUIRREL HOLDS ONTO THE NUT.

© 1994 The Field Museum

HOLD IT!

RABBITS AND RODENTS SECTION

FIND THESE RABBITS AND RODENTS: WHITE-TAILED JACKRABBIT [MUSEUM # **114**], EASTERN GRAY SQUIRREL [MUSEUM # **115**], BEAVER [MUSEUM # **117**], AND NORTH AMERICAN PORCUPINE [MUSEUM # **117**].

LOOK AT EACH ANIMAL AND ITS SKELETON.
BECAUSE THERE IS NO MOUNT OF THE EASTERN GRAY SQUIRREL, USE THE MEXICAN GRAY SQUIRREL (JUST TO THE RIGHT OF THE EASTERN GRAY SQUIRREL) TO HELP YOU SEE WHAT THE EASTERN GRAY SQUIRREL LOOKS LIKE.

IMAGINE HOW EACH WOULD HAVE MOVED.

TRY TO MOVE LIKE EACH ONE.

NOTICE HOW THE LEGS AND FEET OF EACH HAVE EVOLVED FOR THE WAY IT MOVES. BECAUSE HUMANS EVOLVED UPRIGHT WALKING, IT IS HARD FOR US TO MOVE LIKE THESE OTHER ANIMALS.

WHICH WAS THE EASIEST TO MOVE LIKE?

WHICH WAS THE HARDEST TO MOVE LIKE?

HOW DOES EACH ANIMAL USUALLY MOVE? MAKE AN **X** IN THE BOX.

	WALKS FLAT ON ITS FEET	WALKS ON ITS TOES	WALKS ON ITS TOENAILS	WALKS ON ITS KNUCKLES	SWIMS IN WATER	FLIES THROUGH AIR
WHITE-TAILED JACKRABBIT [MUSEUM # **114**]		X				
EASTERN GRAY SQUIRREL [MUSEUM # **115**]	X					
BEAVER [MUSEUM # **117**]	X					
NORTH AMERICAN PORCUPINE [MUSEUM # **117**]	X					

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LET'S HAVE A HAND

PRIMATES, BATS, AND SHREWS SECTION

ALL ANIMALS IN THE PRIMATES, BATS, AND SHREWS SECTION EVOLVED FROM INSECT-EATING ANCESTORS. IN FACT, MOST SPECIES IN THIS SECTION EAT INSECTS.

ALTHOUGH MANY PEOPLE THINK OF BATS AS SUCKING BLOOD FROM MAMMALS, VERY FEW SPECIES DO. MOST EAT FRUIT OR INSECTS.

MANY SHREWS AND MOLES EAT INSECTS IN ADDITION TO WORMS, AND OTHER SMALL ANIMALS.

MANY MONKEYS AND APES EAT INSECTS, TOO. DO YOU?

LOOK AT THE BONES IN A CHIMPANZEE HAND ON THE DRAWING AND ON THE CHIMPANZEE SKELETON [MUSEUM #133].

LOOK YOUR HAND AND THE HAND ON THE HUMAN SKELETON [MUSEUM #134].

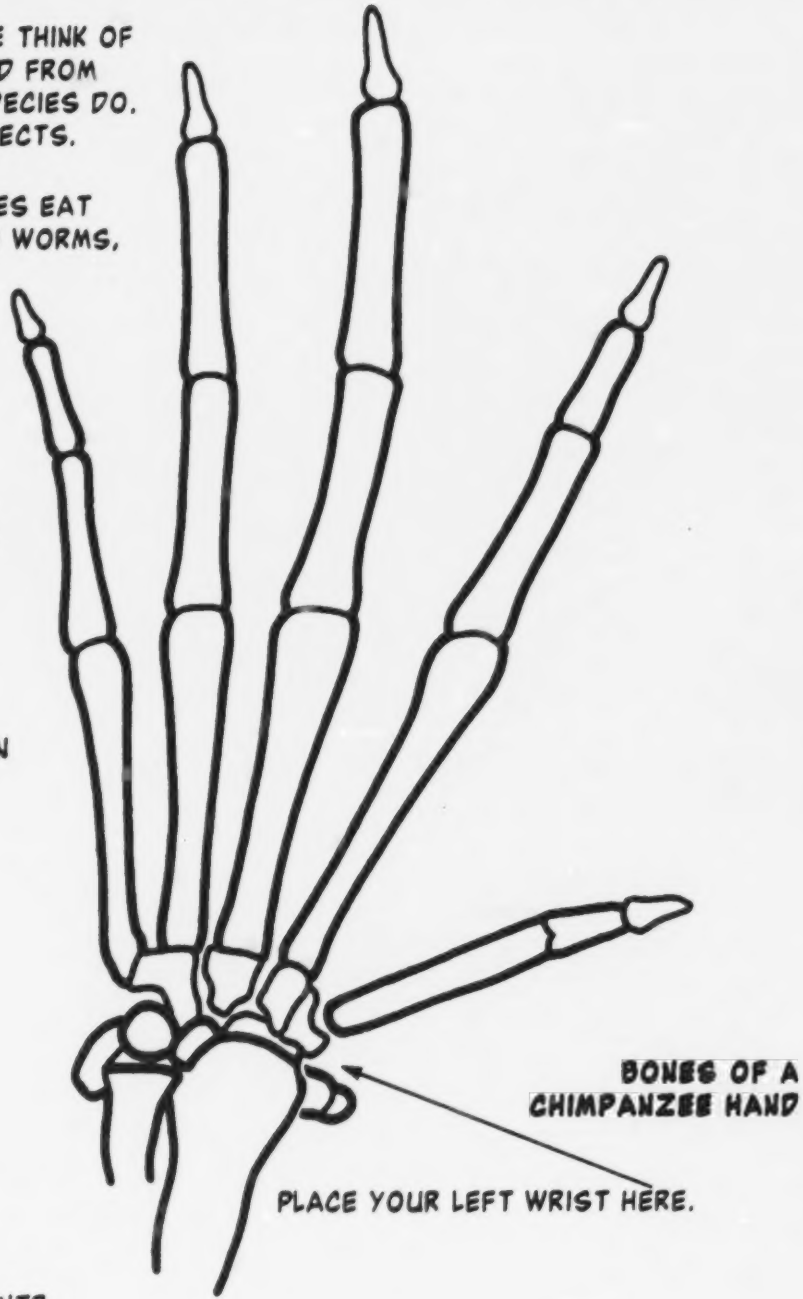
PLACE YOUR LEFT HAND OVER THIS DRAWING.

TRACE YOUR HAND.

WHICH BONES IN THE CHIMPANZEE HAND MATCH THOSE IN YOUR HAND?

HOW ARE THEY ALIKE?

HOW ARE THEY DIFFERENT?



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LET'S HAVE A HAND

PRIMATES, BATS, AND SHREWS SECTION

FIND THESE MAMMALS IN THE PRIMATES, BATS, AND SHREWS SECTION: INDIAN FLYING FOX [MUSEUM #**132**], CHIMPANZEE [MUSEUM #**133**], LOWLAND GORILLA [MUSEUM #**134**], AND HUMAN [MUSEUM #**134** & **135**].

LOOK AT EACH ANIMAL AND ITS SKELETON.

IMAGINE HOW EACH WOULD HAVE MOVED.

TRY TO MOVE LIKE EACH OF THESE. THE HUMAN SHOULD BE EASY. THE OTHERS WILL BE MORE CHALLENGING.

NOTICE HOW THE LEGS AND FEET OF EACH HAVE EVOLVED FOR THE WAY IT MOVES. BECAUSE HUMANS EVOLVED UPRIGHT WALKING, IT IS HARD FOR US TO MOVE LIKE THESE OTHER ANIMALS.

WHICH WAS THE EASIEST TO MOVE LIKE?

WHICH WAS THE HARDEST TO MOVE LIKE?

HOW DOES EACH ANIMAL USUALLY MOVE? **MAKE** AN **X** IN THE BOX.

	WALKS FLAT ON ITS FEET	WALKS ON ITS TOES	WALKS ON ITS TOENAILS	WALKS ON ITS KNUCKLES	SWIMS IN WATER	FLIES THROUGH AIR
INDIAN FLYING FOX [MUSEUM #**132**]						
CHIMPANZEE [MUSEUM #**133**]						
LOWLAND GORILLA [MUSEUM #**134**]						
HUMAN [MUSEUM #**134** & **135**]						

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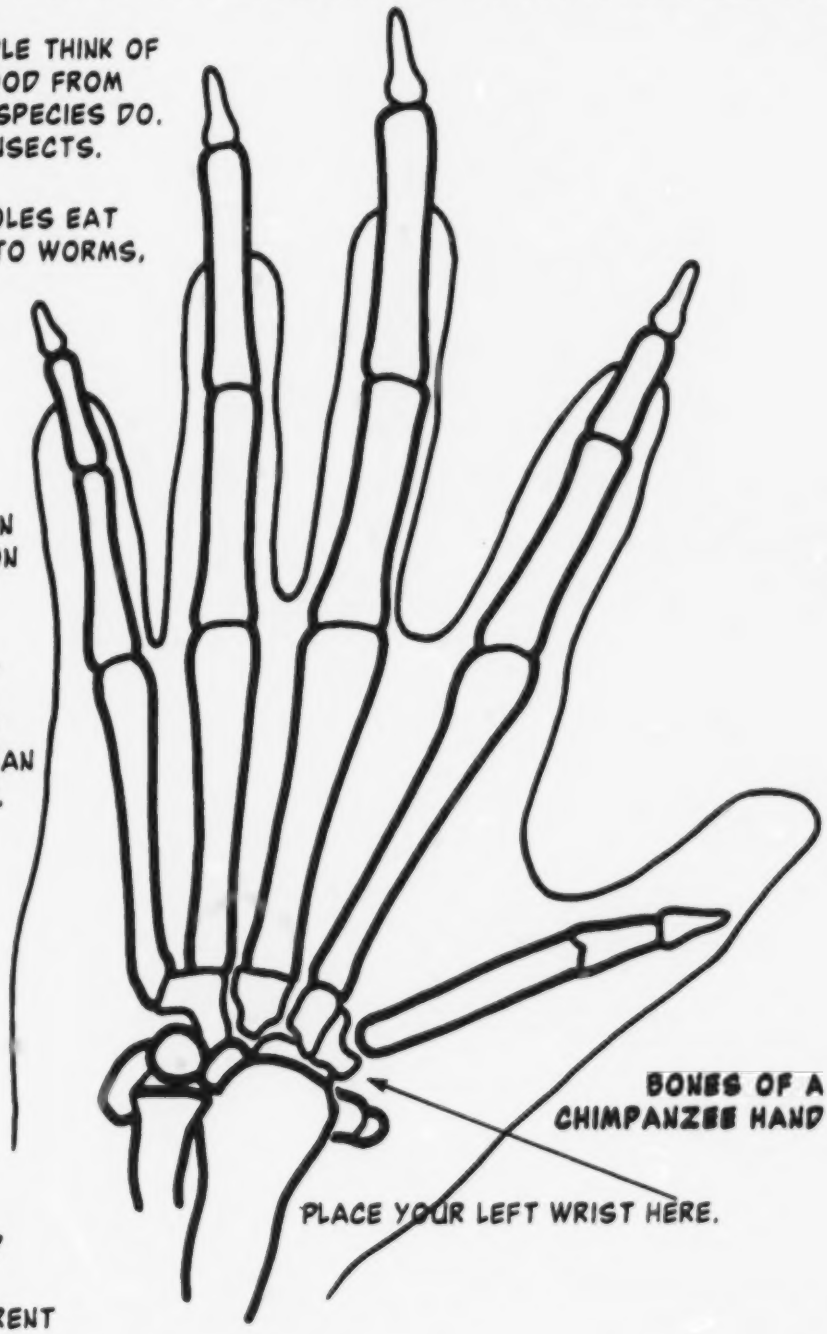
WHICH BONES IN THE CHIMPANZEE HAND MATCH THOSE IN YOUR HAND?

HOW ARE THEY ALIKE?

HOW ARE THEY DIFFERENT



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INDIAN FLYING FOX [MUSEUM #**132**]						X
CHIMPANZEE [MUSEUM #**133**]	X			X		
LOWLAND GORILLA [MUSEUM #**134**]	X			X		
HUMAN [MUSEUM #**134** & **135**]	X					

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African Animal Observations

Skills

- Inferring
- Observing

In Brief

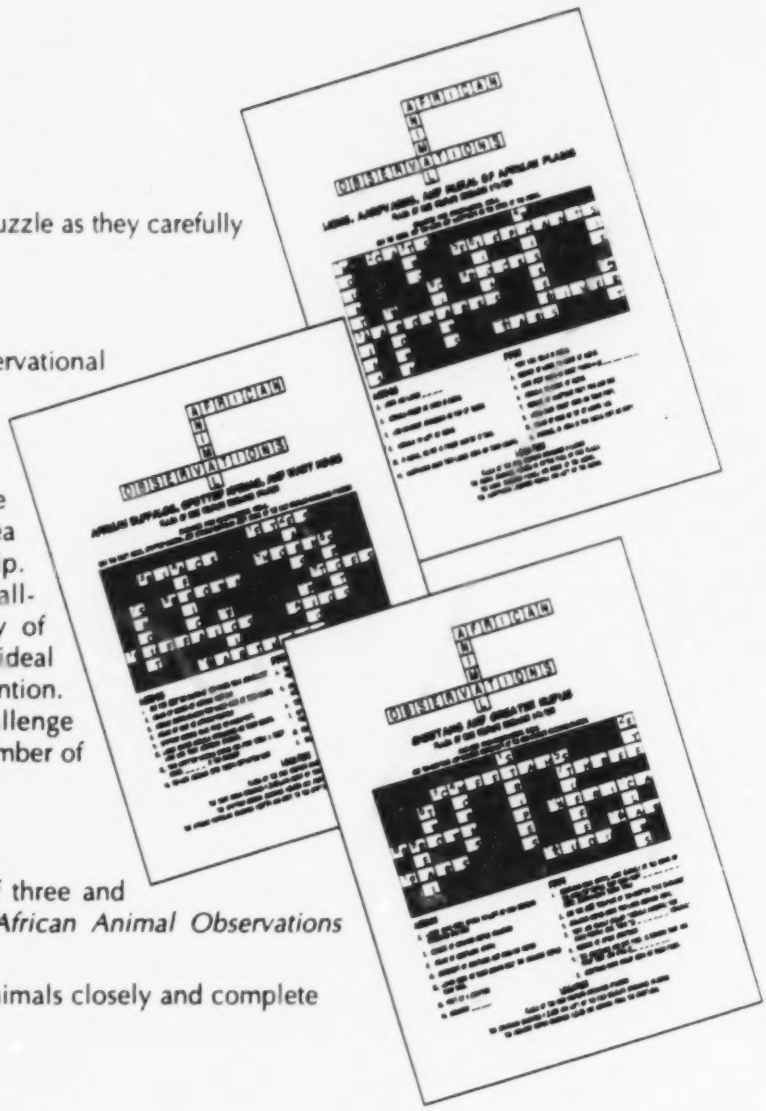
Students complete a crossword puzzle as they carefully observe African animals.

Goal

Students will improve other observational skills while having fun.

Background

The Plaza by the Rice Wildlife Research Station is a inviting area to regroup during a field trip. Tables, chairs, a dramatic wall-sized-mural, and a fine variety of mammal mounts make this an ideal location to refocus a group's attention. Three crossword puzzles challenge students to closely observe a number of African mammals.



Directions

1. Divide students into teams of three and give each team a different *African Animal Observations* activity sheet.
2. Ask students to observe the animals closely and complete their crossword puzzles.

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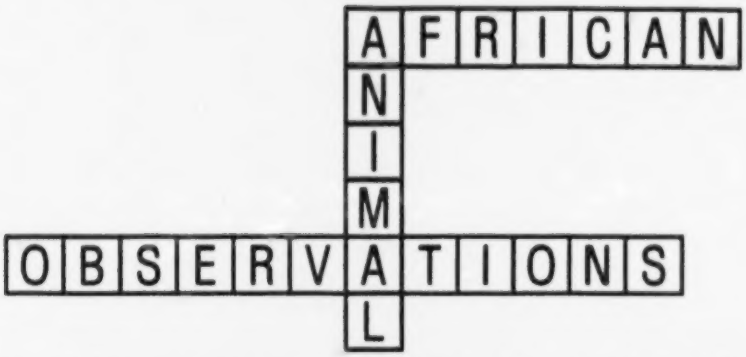
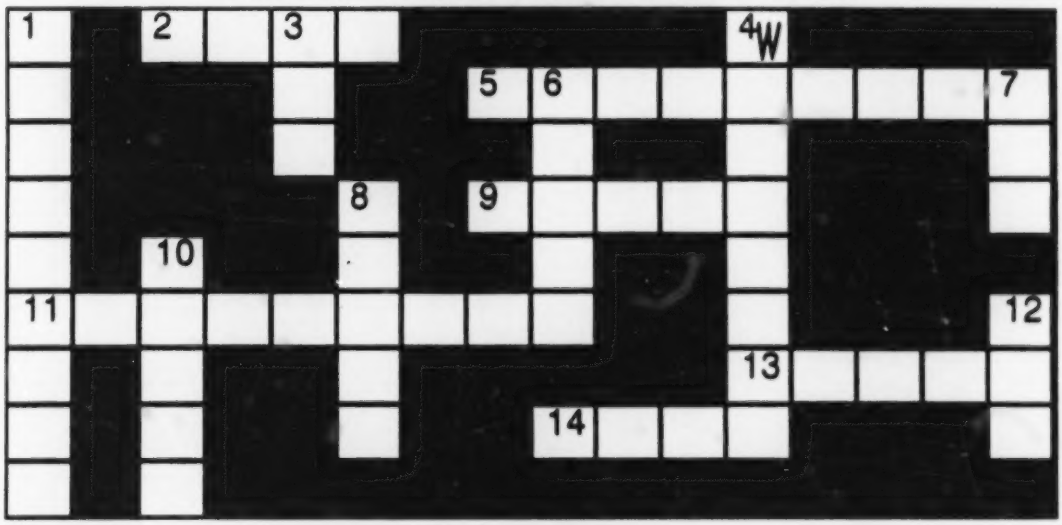


LIONS, AARDVARKS, AND MURAL OF AFRICAN PLAINS

PLAZA OF RICE WILDLIFE RESEARCH STATION

CHALLENGE YOUR OBSERVATIONAL SKILLS.
USE THE MURAL AND THE LIONS AND AARDVARKS ON THE SIDES OF THE MURAL.



ACROSS

2. LIONS ARE LARGE _____.
5. ANIMALS FOUND AT RIVER IN MURAL
9. LION ON RIGHT CROUCHES ON TOP OF THESE.
11. ANIMALS TO LEFT OF MURAL
13. IN MURAL, WATER IS FOUND MOSTLY IN THIS.
14. AARDVARKS HAVE TWO LARGE ONES ON THEIR HEADS.

DOWN

1. VERY TALL HILLS IN MURAL
3. NUMBER OF LIONS TO RIGHT OF MURAL
4. LONG STIFF HAIRS ON LIONS' FACES = W_____
6. ANIMALS TO RIGHT OF MURAL
7. NUMBER OF AARDVARK FEET YOU CAN SEE
8. LIONS HAVE SHARP ONES ON THEIR FEET.
10. COLOR OF HAIR ON TIP OF LION'S TAIL
12. OVERALL, IS AREA IN THE MURAL WET OR DRY?

LOCATION

PLAZA OF THE RICE WILDLIFE RESEARCH STATION
THE MURAL (MUSEUM #215) IS ON THE WALL OF RICE PLAZA.
THE LIONS (MUSEUM #212) ARE RIGHT OF THE MURAL.
THE AARDVARKS (MUSEUM #216) ARE LEFT OF THE MURAL.

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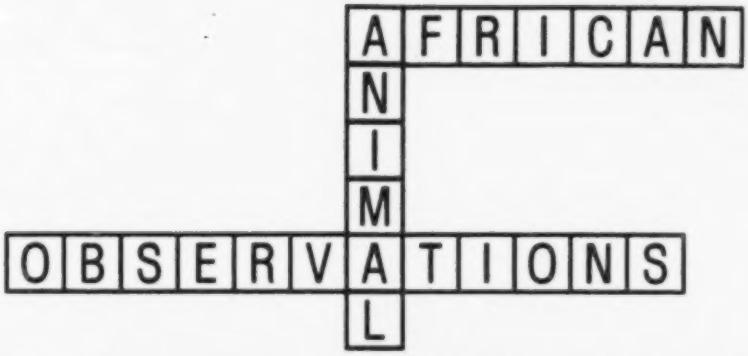
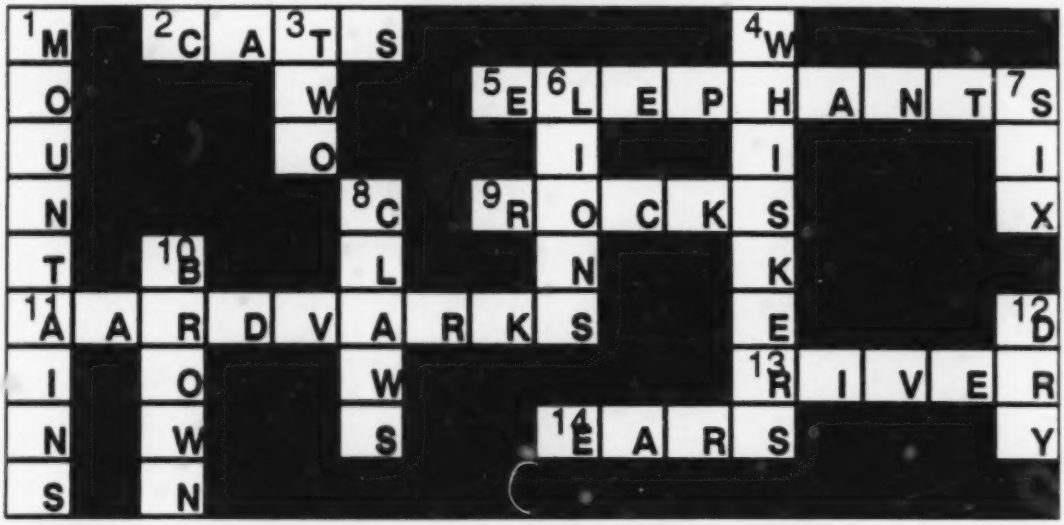


LIONS, AARDVARKS, AND MURAL OF AFRICAN PLAINS

PLAZA OF RICE WILDLIFE RESEARCH STATION

CHALLENGE YOUR OBSERVATIONAL SKILLS.
USE THE MURAL AND THE LIONS AND AARDVARKS ON THE SIDES OF THE MURAL.



ACROSS

2. LIONS ARE LARGE _ _ _ _.
5. ANIMALS FOUND AT RIVER IN MURAL
9. LION ON RIGHT CROUCHES ON TOP OF THESE.
11. ANIMALS TO LEFT OF MURAL
13. IN MURAL, WATER IS FOUND MOSTLY IN THIS.
14. AARDVARKS HAVE TWO LARGE ONES ON THEIR HEADS.

DOWN

1. VERY TALL HILLS IN MURAL
3. NUMBER OF LIONS TO RIGHT OF MURAL
4. LONG STIFF HAIRS ON LIONS' FACES = W_ _ _ _ _ _ _
6. ANIMALS TO RIGHT OF MURAL
7. NUMBER OF AARDVARK FEET YOU CAN SEE
8. LIONS HAVE SHARP ONES ON THEIR FEET.
10. COLOR OF HAIR ON TIP OF LION'S TAIL
12. OVERALL, IS AREA IN THE MURAL WET OR DRY?

LOCATION

PLAZA OF THE RICE WILDLIFE RESEARCH STATION
THE MURAL (MUSEUM #215) IS ON THE WALL OF RICE PLAZA.
THE LIONS (MUSEUM #212) ARE RIGHT OF THE MURAL.
THE AARDVARKS (MUSEUM #216) ARE LEFT OF THE MURAL.

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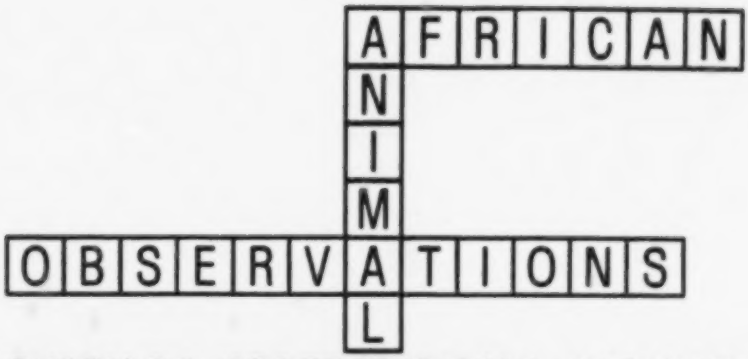
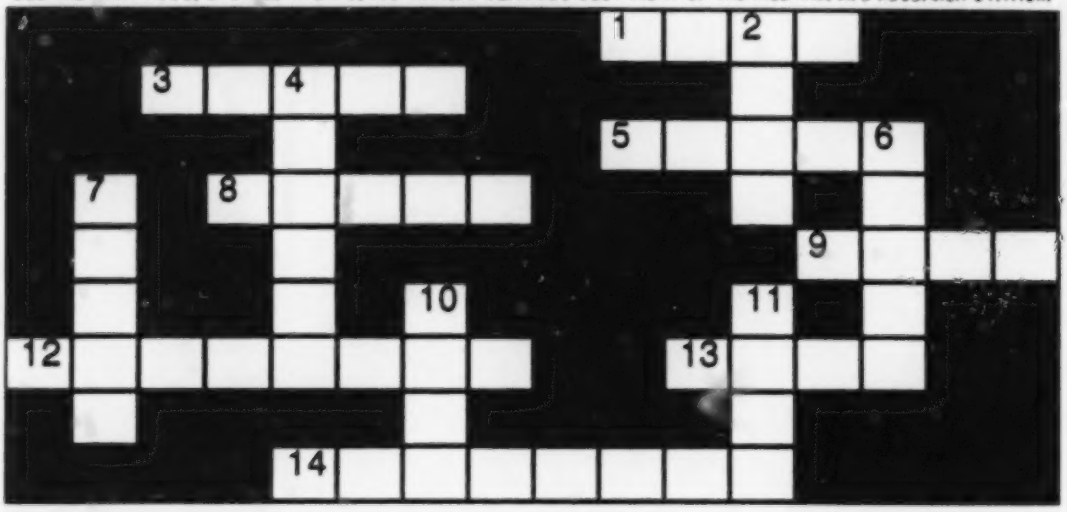


AFRICAN BUFFALOS, SPOTTED HYENAS, AND WART HOGS

PLAZA OF RICE WILDLIFE RESEARCH STATION

CHALLENGE YOUR OBSERVATIONAL SKILLS.
USE THE WART HOGS, SPOTTED HYENAS, AND AFRICAN BUFFALOS JUST RIGHT OF THE RICE WILDLIFE RESEARCH STATION.



ACROSS

1. CAN YOU **SEE** THE PARTS OF THE HYENA THAT ARE GLASS?
3. COLOR OF HORNS OF AFRICAN BUFFALO
5. AFRICAN BUFFALOS HAVE TWO LARGE ONES ON THEIR HEADS.
8. COLOR OF HAIR ON AFRICAN BUFFALO
9. SPOTTED HYENAS HAVE FOUR ON EACH FOOT.
12. LARGE BROWN ANIMALS WITH HORNS ON THEIR HEADS. LOOK LIKE THEIR AMERICAN COUSINS.
13. TWO SPOTTED HYENAS WATCH FOR PREY WHILE A THIRD HYENA _ _ _ _ IN THE GROUND.
14. PIG-LIKE ANIMALS WITH TUSKS BUT LITTLE HAIR

DOWN

2. THE SPOTTED HYENAS KEEP THEIR EYES AND _ _ _ _ POINTED AT THE HOLE WAITING FOR FOOD.
4. CONTINENT OF THE SPOTTED HYENAS AND THE AFRICAN BUFFALO
6. THESE MARKS GIVE THE SPOTTED HYENA ITS NAME.
7. WITHOUT TUSKS, A WART HOG'S NOSE LOOKS LIKE A PIG'S _ _ _ _ _.
10. NUMBER OF TUSKS ON WART HOGS
11. WART HOGS LOOK A LOT LIKE THESE FARM ANIMALS.

LOCATION

PLAZA OF THE RICE WILDLIFE RESEARCH STATION
THE WART HOGS (MUSEUM #**218**) ARE RIGHT OF THE RICE WILDLIFE RESEARCH STATION.
THE SPOTTED HYENAS (MUSEUM #**219**) ARE JUST ACROSS FROM THE WART HOGS
THE AFRICAN BUFFALOS (MUSEUM #**217**) ARE NEXT TO THE SPOTTED HYENA'S AND TWO CASES LEFT OF THE MURAL.

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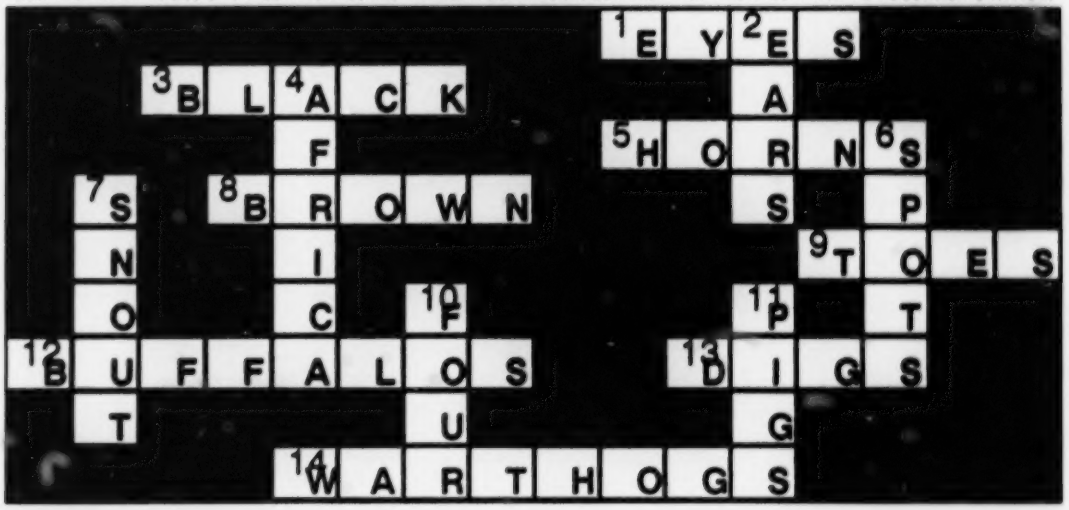
AFRICAN BUFFALOS, SPOTTED HYENAS, AND WART HOGS

PLAZA OF RICE WILDLIFE RESEARCH STATION

CHALLENGE YOUR OBSERVATIONAL SKILLS.
USE THE WART HOGS, SPOTTED HYENAS, AND AFRICAN BUFFALOS JUST RIGHT OF THE RICE WILDLIFE RESEARCH STATION.



ACROSS

1. CAN YOU **SEE** THE PARTS OF THE HYENA THAT ARE GLASS?
3. COLOR OF HORNS OF AFRICAN BUFFALO
5. AFRICAN BUFFALOS HAVE TWO LARGE ONES ON THEIR HEADS.
8. COLOR OF HAIR ON AFRICAN BUFFALO
9. SPOTTED HYENAS HAVE FOUR ON EACH FOOT.
12. LARGE BROWN ANIMALS WITH HORNS ON THEIR HEADS. LOOK LIKE THEIR AMERICAN COUSINS.
13. TWO SPOTTED HYENAS WATCH FOR PREY WHILE A THIRD HYENA _____ IN THE GROUND.
14. PIG-LIKE ANIMALS WITH TUSKS BUT LITTLE HAIR

DOWN

2. THE SPOTTED HYENAS KEEP THEIR EYES AND _____ POINTED AT THE HOLE WAITING FOR FOOD.
4. CONTINENT OF THE SPOTTED HYENAS AND THE AFRICAN BUFFALO
6. THESE MARKS GIVE THE SPOTTED HYENA ITS NAME.
7. WITHOUT TUSKS, A WART HOG'S NOSE LOOKS LIKE A PIG'S _____.
10. NUMBER OF TUSKS ON WART HOGS
11. WART HOGS LOOK A LOT LIKE THESE FARM ANIMALS.

LOCATION

PLAZA OF THE RICE WILDLIFE RESEARCH STATION
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THE SPOTTED HYENAS (MUSEUM #**219**) ARE JUST ACROSS FROM THE WART HOGS
THE AFRICAN BUFFALOS (MUSEUM #**217**) ARE NEXT TO THE SPOTTED HYENA'S AND TWO CASES LEFT OF THE MURAL.

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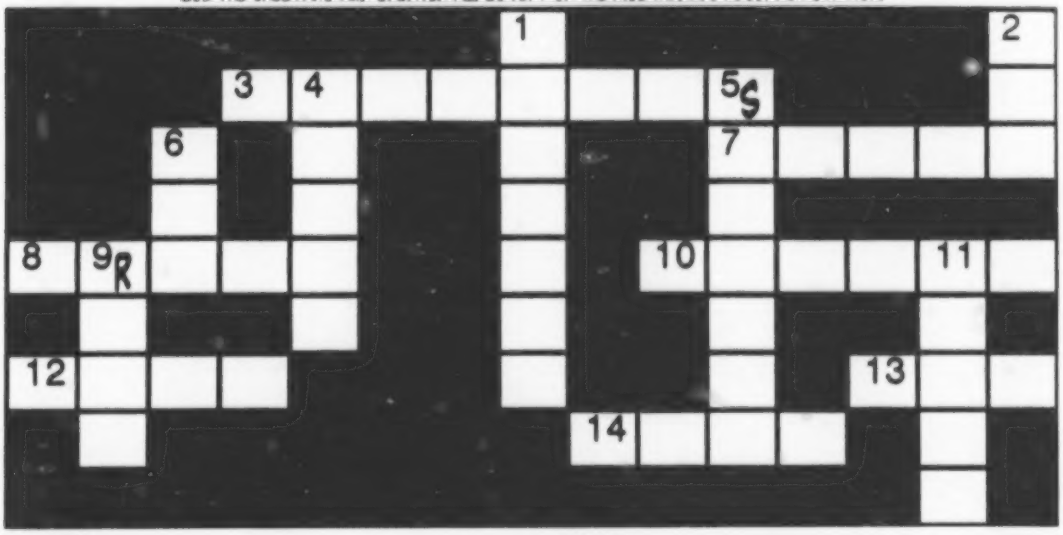
AFRICAN
ANIMAL
OBSERVATIONS

CHEETAHS AND GREATER KUDUS

PLAZA OF RICE WILDLIFE RESEARCH STATION

CHALLENGE YOUR OBSERVATIONAL SKILLS.
USE THE CHEETAHS AND GREATER KUDUS LEFT OF THE RICE WILDLIFE RESEARCH STATION.



ACROSS

3. LARGE CATS WITH SPOTS TO LEFT OF RICE WILDLIFE RESEARCH STATION
7. NUMBER OF GREATER KUDUS STANDING
8. COLOR OF CHEETAH'S SPOTS
10. CONTINENT OF CHEETAHS AND GREATER KUDUS
12. LARGE ONES ON THEIR HEADS HELP THE GREATER KUDUS HEAR WELL.
13. FOOT OF A CHEETAH
14. GREATER _ _ _ _

DOWN

1. CHEETAHS HAVE SPOTS. LOOK CLOSELY AT THE SIDES OF THE GREATER KUDUS. THEY HAVE FAINT _ _ _ _ _ _ _. (HINT: ZEBRAS HAVE THESE TOO.)
2. CAN YOU SEE THIS PART OF THE CHEETAH THAT IS GLASS?
4. GREATER KUDUS HAVE TWO LONG CURVING ONES.
5. THEY ARE REALLY CALLED "ANIMALS MOUNTS," BUT SOME PEOPLE CALL THEM "S _ _ _ _ _ _ ANIMALS."
6. NUMBER OF ADULT CHEETAHS
9. THE CHEETAHS ARE NOT FAKE. ALTHOUGH THEY ARE DEAD THEY ARE STILL R _ _ _.
11. CHEETAHS HAVE SHARP ONES ON THEIR PAWS.

LOCATION

PLAZA OF THE RICE WILDLIFE RESEARCH STATION
THE CHEETAHS (MUSEUM #210) ARE LEFT OF THE RICE WILDLIFE RESEARCH STATION.
THE GREATER KUDUS (MUSEUM #211) ARE ACROSS FROM THE CHEETAHS.

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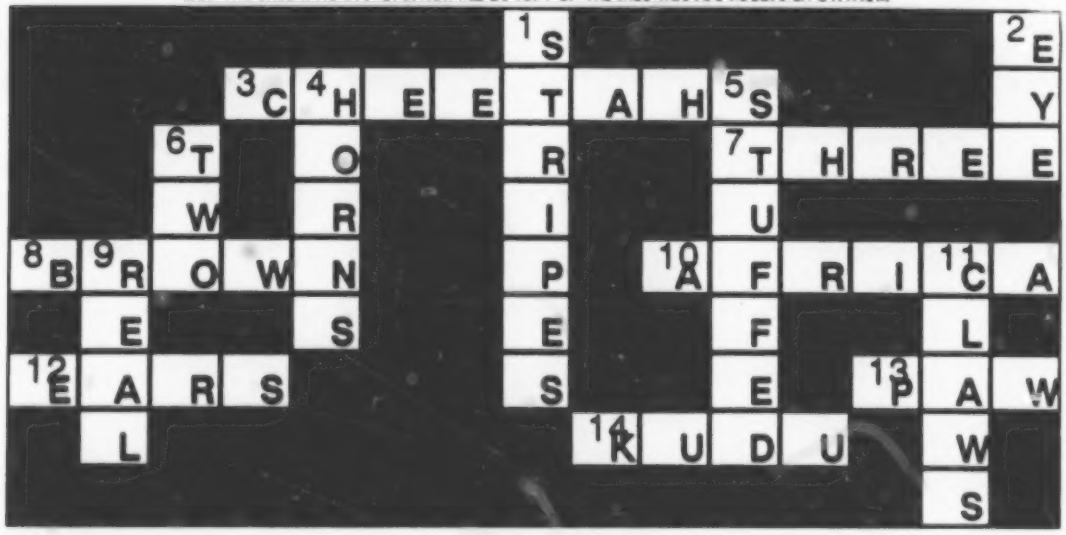
AFRICAN
ANIMAL
OBSERVATIONS

CHEETAHS AND GREATER KUDUS

PLAZA OF RICE WILDLIFE RESEARCH STATION

CHALLENGE YOUR OBSERVATIONAL SKILLS.
USE THE CHEETAHS AND GREATER KUDUS LEFT OF THE RICE WILDLIFE RESEARCH STATION.



ACROSS

3. LARGE CATS WITH SPOTS TO LEFT OF RICE WILDLIFE RESEARCH STATION
7. NUMBER OF GREATER KUDUS STANDING
8. COLOR OF CHEETAH'S SPOTS
10. CONTINENT OF CHEETAHS AND GREATER KUDUS
12. LARGE ONES ON THEIR HEADS HELP THE GREATER KUDUS HEAR WELL.
13. FOOT OF A CHEETAH
14. GREATER _ _ _ _

DOWN

1. CHEETAHS HAVE SPOTS. LOOK CLOSELY AT THE SIDES OF THE GREATER KUDUS. THEY HAVE FAINT _ _ _ _ _ _ _ _. (HINT: ZEBRAS HAVE THESE TOO.)
2. CAN YOU ***SEE*** THIS PART OF THE CHEETAH THAT IS GLASS?
4. GREATER KUDUS HAVE TWO LONG CURVING ONES.
5. THEY ARE REALLY CALLED "ANIMALS MOUNTS," BUT SOME PEOPLE CALL THEM "S _ _ _ _ _ _ ANIMALS."
6. NUMBER OF ADULT CHEETAHS
9. THE CHEETAHS ARE NOT FAKE. ALTHOUGH THEY ARE DEAD THEY ARE STILL R _ _ _.
11. CHEETAHS HAVE SHARP ONES ON THEIR PAWS.

LOCATION

PLAZA OF THE RICE WILDLIFE RESEARCH STATION
THE CHEETAHS (MUSEUM #**210**) ARE LEFT OF THE RICE WILDLIFE RESEARCH STATION.
THE GREATER KUDUS (MUSEUM #**211**) ARE ACROSS FROM THE CHEETAHS.

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Four Seasons Flexagon

Skills

- Comparing
- Observing

In Brief

Students explore the cycle of the seasons in the Great Lakes region by making a changing flexagon showing the Museum's Four Seasons Dioramas.

Goal

To develop observation skills by precuing or following up Museum observations. To develop an understanding of the cycle of the seasons and prepare students for observing when they visit the Museum (or reinforce their observational skills after a visit).

Background

The annual weather changes in the Great Lakes region cause four distinct seasons: very early spring when few plants have sprouted new growth and the animals still are haggard from a long winter; summer with many plants and well-nourished young animals; fall marked by the dropping of colorful leaves; and finally winter with it blanket of snow. A year's nature lesson about change and cycles can be taught using the classic Four Seasons Dioramas at The Field Museum.

Directions

Note: This activity works well to prepare student to visit the Museum or to follow up a visit.

Supplies: 1 scissors and 8" clear tape per student.

Preparation: Copy one *Four Seasons Flexagon* activity sheet for each student. Make sure the front and back sides line up. If possible, enlarge to legal size (8½ × 14") or ledger size (11 × 17"). Use high quality, non-recycled paper. The fibers in low quality paper and recycled paper are shorter and do not hold up as well to repeated bending. To assist visual learners make and display the in-between stages.

1. Distribute *Four Seasons Flexagon* activity sheets and direct students to assemble their flexagon in a step-by-step manner along with you to assure student success. Use directions on student activity sheet. The following tips corresponding to student directions:

   ❶ Make creases neat and firm using fingernail. Make each fold first in one direction and then in the other direction. Follow lines closely.

   ❷ Don't cut until *all* creases are made including the small tabs on the end. Cut *all* dotted lines.

   ❸ Suggest two students work together on this part. Tell students to cut eight 1" pieces of tape before continuing. This is the most challenging part, especially at the start. Be sure all students match and tape each part correctly before proceeding.

   ❹ After assembly, rotate the inside up and out. The four seasons will appear in order. If the picture does not look right, the student is looking at the back side. Turn it over.

2. Ask students to look closely at each season. Which is early spring? summer? fall? winter, ? Ask students to observe changes from season to season.

3. **As a Pre-Visit Activity:** Tell students to bring their flexagons with them to the Museum and compare them to the actual Four Seasons Dioramas (Museum # **29**, **30**, **32**, and **33**). How are they the same? different?

   As a Follow-Up Activity: While at the Museum ask students to write two observations about each of the Four Seasons Dioramas (Museum # **29**, **30**, **32**, and **33**). After assembling their flexagons ask them to check their Museum-based observations.

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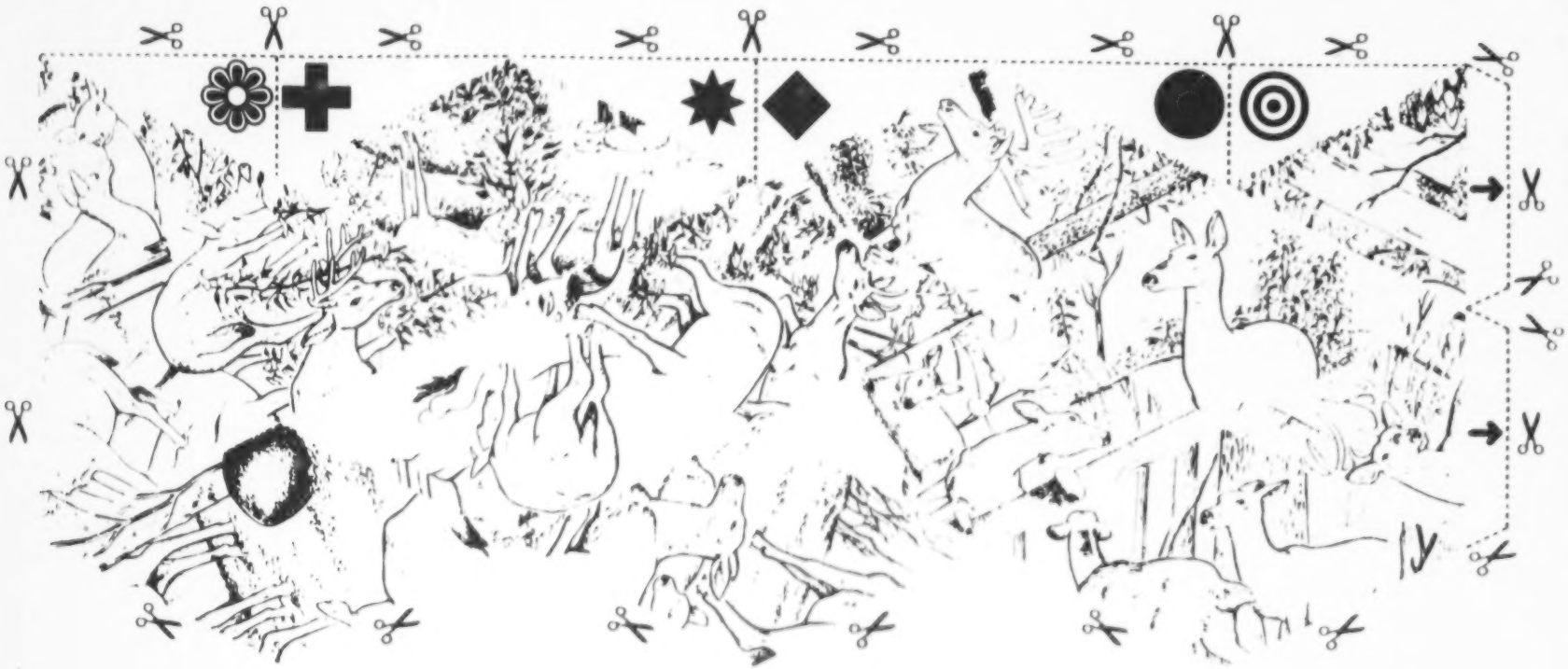

THE FOUR SEASONS FLEXAGON

❶ FOLD FOLD AND CREASE ALONG EVERY SOLID LINE AND THEN FLATTEN BACK OUT.

❷ CUT CUT ALONG THE DOTTED LINES.

❸ MATCH AND TAPE

MATCH THE ✿ TO THE ✿ AND TAPE TOGETHER.
MATCH THE ✚ TO THE ✚ AND TAPE TOGETHER.
DO THE SAME WITH THE ✸, ◆, ●, AND ◎.

❹ PUT TOGETHER

MAKE THE FOUR SEASONS DIORAMA INTO A DONUT SHAPE.
PUT THE → END INTO THE OPENING ON THE OTHER END AND TAPE TOGETHER ON BOTH SIDES.

THE FOUR SEASONS FLEXAGON

❶ **FOLD** FOLD AND CREASE ALONG EVERY SOLID LINE AND THEN FLATTEN BACK OUT.

❷ **CUT** CUT ALONG THE DOTTED LINES.

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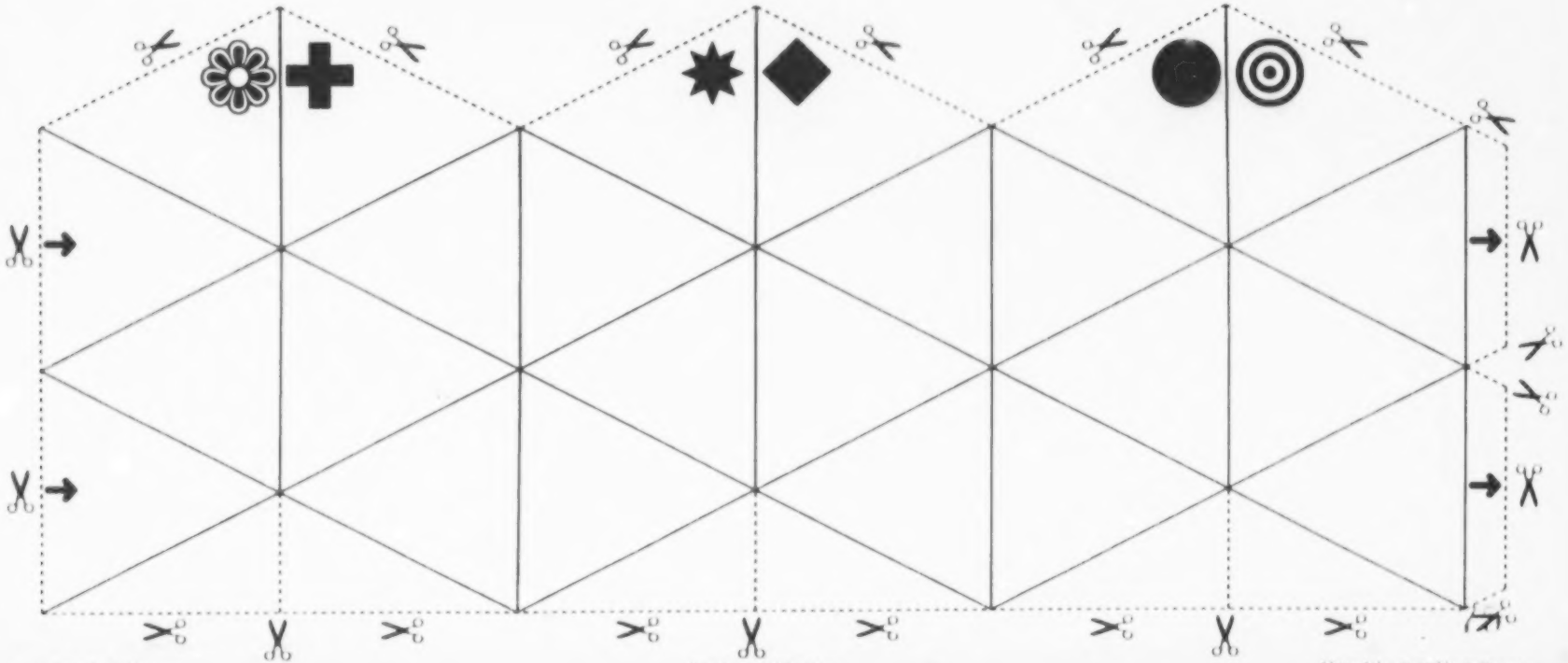

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Hands-On Activities from Projects

Make It Live!

Skills

- Analyzing
- Comparing
- Observing

In Brief

By carefully coloring drawings of Museum dioramas students develop their observational skills and discover the richness of the actual dioramas.

Background

Dioramas are rich visual feasts—so rich that students often have difficulty savoring the dioramas fully. Teachers asked for diorama drawings—by coloring them their students could "nibble" slowly, appreciate the dioramas more fully, and develop their observational skills. We choose the Four Seasons Dioramas (Museum # **29**, **30**, **32**, and **33**) showing the changing seasons typical of the Midwest, a standard curricular topic.

Directions

Note: Use all four seasons or focus on the season when you will visit the Museum. The Museum does not recommend students color drawings in the exhibit.

1. Give each student a *Make it Live!* activity sheet. Ask students to study them closely.

2a. **As a pre-visit activity** this prepares student for active observing by precuing observations. Ask students to list what each drawing shows, to guess which colors will be most accurate, and to "make it live" by adding color. At the Museum ask students to observe the actual dioramas closely, and to compare the dioramas with their colored drawings. Ask what is different, what is the same.

2b. **As a follow-up activity** this challenges students to recall clearly their museum observations. Tell students to bring the drawings to the Museum (to use an observational aid) OR to leave them at school (to challenge their observation skills). Direct students to observe the actual dioramas carefully. Back at school, ask each student to add colors to the drawing to "make it live."

Extensions

1. Encourage students to compare their drawings. What differences do they find? What similarities?
2. Assign students to color one season before visiting the Museum and a different one after visiting. Which was easier? Which was more accurate?
3. Photograph the dioramas. Ask students to compare their colored drawings with your photos.
4. Allow interested students to create life-sized drawings of the dioramas using butcher paper.

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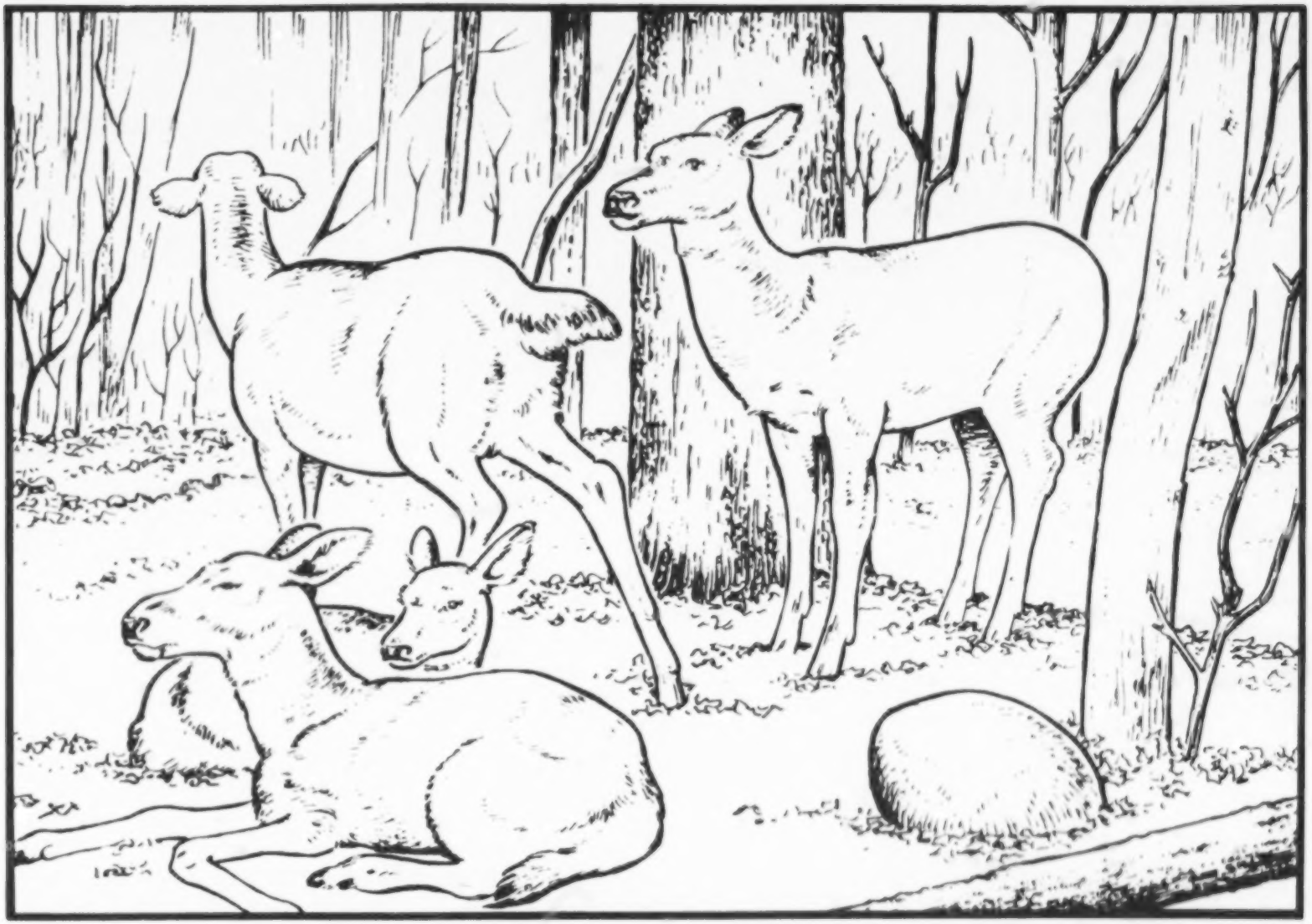

WHITE-TAILED DEER IN EARLY SPRING

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LOOK AT THIS DRAWING OF THE SPRING DIORAMA. **VISIT** THE DIORAMAS OF ALL FOUR SEASONS AT THE FIELD MUSEUM. **MAKE** THIS DRAWING COME TO LIFE BY ADDING COLOR.

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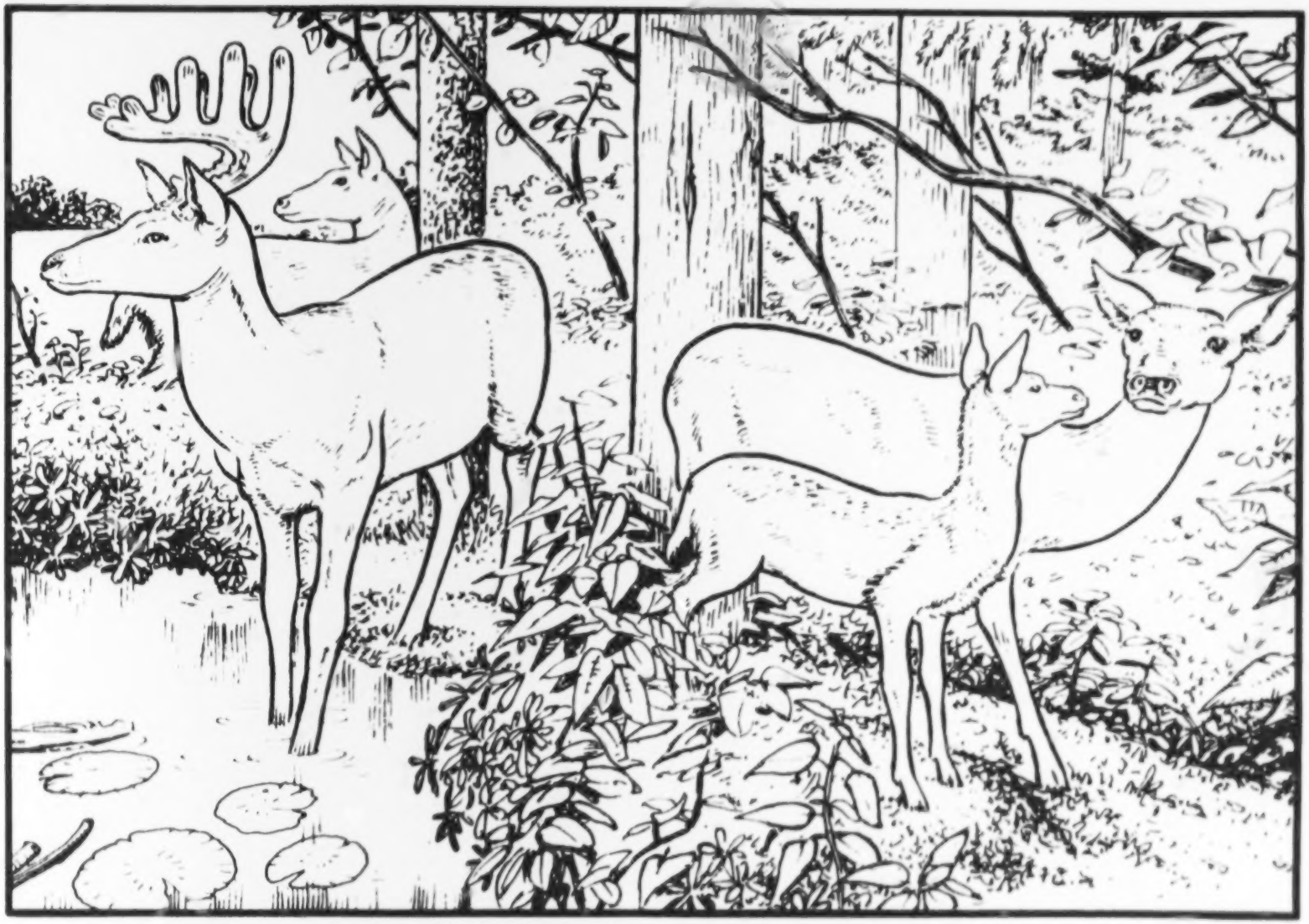

WHITE-TAILED DEER IN SUMMER

LOOK AT THIS DRAWING OF THE SUMMER DIORAMA. **VISIT** THE DIORAMAS OF ALL FOUR SEASONS AT THE FIELD MUSEUM. **MAKE** THIS DRAWING COME TO LIFE BY ADDING COLOR.

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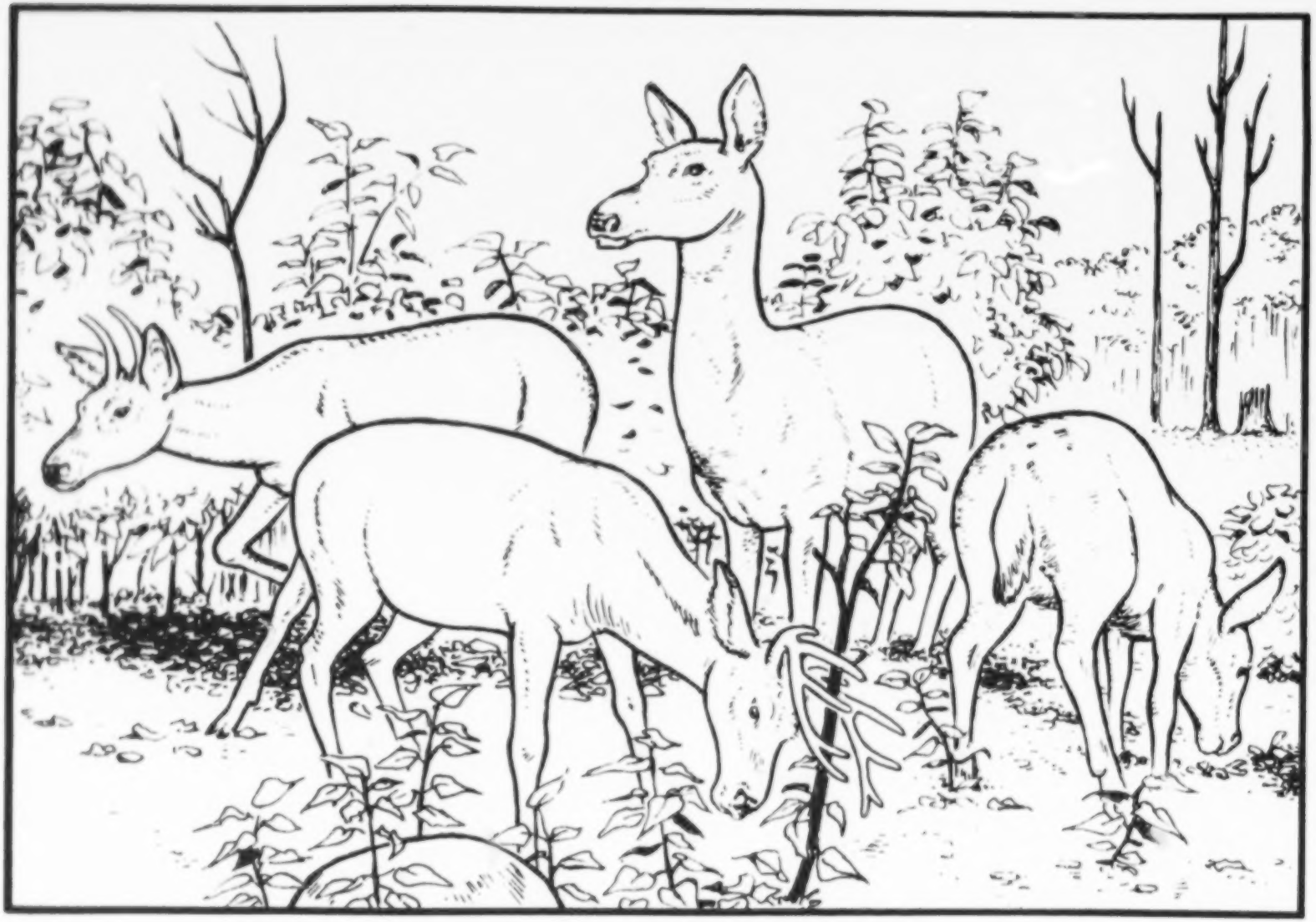

WHITE-TAILED DEER IN FALL

LOOK AT THIS DRAWING OF THE FALL DIORAMA. **VISIT** THE DIORAMAS OF ALL FOUR SEASONS AT THE FIELD MUSEUM. **MAKE** THIS DRAWING COME TO LIFE BY ADDING COLOR.

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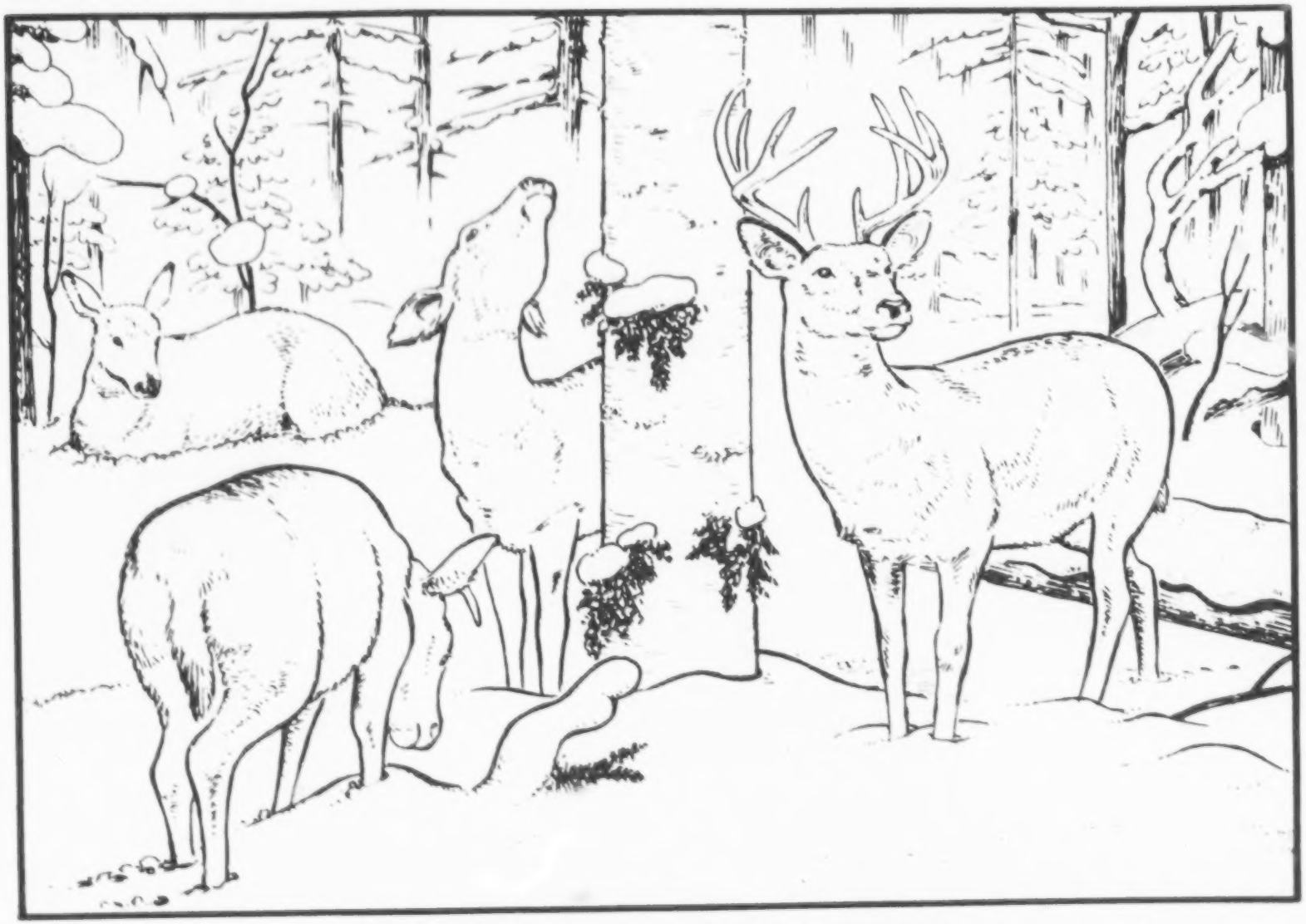

WHITE-TAILED DEER IN WINTER

LOOK AT THIS DRAWING OF THE WINTER DIORAMA. **VISIT** THE DIORAMAS OF ALL FOUR SEASONS AT THE FIELD MUSEUM. **MAKE** THIS DRAWING COME TO LIFE BY ADDING COLOR.

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Are They Real?

The Field Museum is asked many questions about our exhibits and collections. These are the most common.

Are the animals real? What's inside them?

Almost all the animals on display *are* real. Real bird skins cover body-shaped forms. Wires are used to support the legs, wings, and heads. Inside the skins of each mammal is a hollow body-shaped form. Most of these are made by a process like papier-mâché but using burlap. Many of the plants are not real but are actually casts made from molds of real plants.

Why are there *real* animals in the exhibits?

The exhibits allows average people to see real animals. Most of these exhibits were created before television made films about animals and animal behavior easily available in everyone's home. The use of actual animals presents the most accurate and life-like representation. While animals in museum exhibits don't move or exhibit behaviors, people can observe them close-up and learn more than from a simple photo.

Where did all the animals come from?

Almost all the animals you see in the exhibits were collected 50 to 100 years ago from throughout the world. The Museum has been active for many decades in inventorying the diversity of animals, studying their relationships and origins, and communicating this information to the public. The information the Museum has gathered and continues to accumulate is instrumental in conservation efforts to protect the Earth's diversity, and increases our awareness of the incredible richness of the world we live in. Modern natural history museums and zoos strive to increase individual awareness of the natural world and the threats to it.

Why does the Museum have collections of animals?

The Field Museum collections have two important purposes: public display and research.

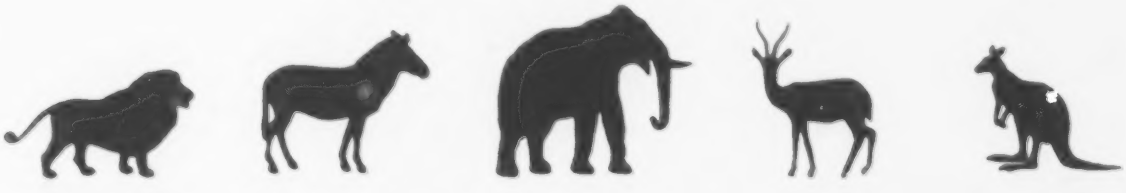
The animals (and plants) on display educate visitors, make them aware of ecological issues, and increase support for the preservation of threatened and endangered species.

The collections are also invaluable for research.

Ecological research is critical to environmental protection. The description and documentation of species at The Field Museum and elsewhere over the last one hundred years allow us to know that certain species are endangered. Without the knowledge that species exist or an awareness of their numbers, we cannot know that they are threatened or endangered. By studying these species we learn their ecological requirements and can identify the factors that threatened them. Arguments for preserves, reserves, and wilderness areas are based on this knowledge. This research yields requirements for successful reserves such as size and shape.

Scientists use the collections in many other ways. Here are few specific examples:

- Biologists research the evolutionary relationships between species.
- Physical anthropologists study ways that people and animals have lived together.
- Veterinarian researchers learn about growth and nutrition.
- Dental researchers study chewing in a variety of animals to understand human dental problems.
- Medical researchers investigate the evolutionary origins of arthritis among primates.



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What collections does The Field Museum have besides animals?

Besides the exhibits and the library with one-quarter million books and journals, the Museum has well over twenty million objects in its collections. These includes gems, minerals, plants, mammals, birds, insects and related animals, fossils of many life forms, cultural objects, and much more.

How much collecting occurs today?

Considering the impact of the research, one might think that museums in the U.S. collect vast quantities of plants and animals. Only 400 museums and similar institutions in the U.S. maintain active collections. The total of all the mammals annually collected in the U.S. is about equal to the amount eaten by 33 foxes or large owls each year. (The amount collected includes animals found dead, such as road kills.) Strict guidelines exist for collecting plants and animals; they are especially strict for those that may be threatened.

How do museum collections and research help preserve species?

By studying species we learn their ecological requirements and can identify the factors that threatened them. Museum research helps (1) identify those species most in need of protection; (2) determine where reserves are needed and where they will be most effective; and (3) shows the requirements for successful reserves such as specific size and shape.

The Museum's long history of research and collecting is invaluable. Sometimes the key to the preservation of a species may lie in the Museum's collections. For example when the number of bald eagles began dropping rapidly, investigators learned the number of eggs hatching each year was low and the shells seemed to be so thin that the weight of the parents incubating the eggs broke the shells]. Scientists wondered if there was truly something different about the eggs. The Museum's collection of eggs dating back over a hundred years allowed researchers to prove that DDT caused the problem and led to banning of DDT.

Do museums cause species to become threatened or endangered?

No. Ecologists today agree that habitat destruction is responsible for the vast majority of endangered species. Almost all animals are geared to high death rates. If allowed to remain in their natural habitat they can recover from most problems. Nevertheless commercial hunting and illegal poaching threatens many species with extinction. Historically a number of well-known examples exist of species that were hunted to extinction or near to extinction. These include the passenger pigeon, the dodo, and the American bison (buffalo).

Why are there threatened and endangered species in the exhibits?

Almost all the animals you see in the exhibits were collected 50 to 100 years ago—many before the Museum even existed. Usually they were common animals in their part of the world. Later, generations of hunting for trophies, fur, ivory, and aphrodisiacs combined with habitat destruction led to their extinction or endangered status. They were collected at a time when attitudes toward the environment were somewhat different than they are today. There were few qualms about collecting animals that would be used to educate generations of people. Questions about the use of animals in exhibits arose long after the exhibits themselves.

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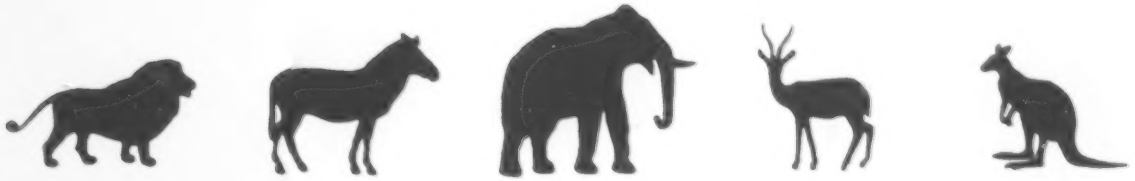

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Dream On

Thoughts from a Museum Scientist

Why does The Field Museum have all these dead animals?

This question comes up over and over again, especially from younger visitors. If one stops to think of how the specimens were killed, skinned, gutted, tanned, mounted and so on, it's not a pretty process. Yes, we still do some of this. No, we don't do as much collecting of large animals or taxidermy as we did sixty years ago, but this *is* one of the jobs of natural history museums.

Why do we do it?

Humans are hunters and gatherers. Early people benefitted greatly from a knowledge of nature. This was a matter of survival. Better hunters provided more food for their families and tribes, so they prospered. Curiosity and fascination about the natural world is a basic human characteristic. Often the knowledge gained is practical, but it can also be pleasing to the spirit to watch an eagle soar or a salmon swim. We identify nature as important. There is even a word for this feeling now: biophilia.

To learn more about animals, we study them. We watch them, photograph them, catch them, trap them, and keep them as pets and in zoos. And we take them apart to see what's inside. Not everybody does this, and that's okay. But, sometimes to learn about life you have to take it apart to see if you can discover how it works. The knowledge gained has formed the basis of modern biology and medicine. Doctors know what they are doing because of generations of accumulated information that started with the first animal dissections. Still, the dilemma of biology remains. Biologists love life, but sometimes to study life you need to prod and poke and test it and take it apart.

This curiosity is so strong, this drive for more knowledge so demanding, that we accept the consequences.

Natural history museums are part of this learning process. Most museums now have already made the exhibits that many find fascinating, and others find upsetting. Today, most museums have accepted the responsibility of care for their exhibits and collections. In fact, museum scientists are called curators. This means caretakers. These scientists care for the collections. Not only must they protect them from damage, they must arrange them so others can study them. The collections contain specimens accumulated over many years. A museum is a library of nature, organized and protected so that many scientists can work with the real objects. In this way our collective knowledge of nature increases.

Save a place.

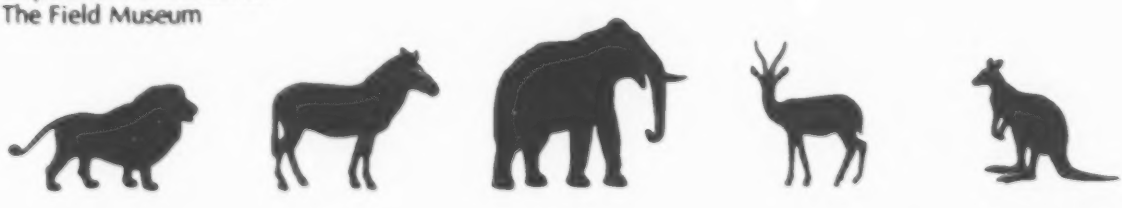
The grand outcome might well be our survival as a species. If to know something is to understand and to love it, then knowing bats, rats, toads, snakes, slime molds, poison ivy, and the myriad of other living things on planet earth—is to love them. If by loving them we know their importance for us, really know that they matter, then perhaps we will save a place for them on the planet.

Back to the grand outcome.

All living things exist as members of ecological systems and these systems make up the biosphere. If we can learn how the individual systems work, then we have a better chance of learning how the biosphere works. If we know how it works, then we are less likely to mess it up. And finally we must realize that people are part of the biosphere, too. My hope is that we soon learn how modern technological humans can coexist with all forms of life on our planet.

Dream on.

John A. Wagner, Ph. D.
Department of Education
The Field Museum



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